

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN**

WISCONSIN ALUMNI RESEARCH
FOUNDATION,

Plaintiff,

v.

APPLE INC.,

Defendant.

Case No. 3:14-cv-00062-WMC

REDACTED PUBLIC VERSION

**APPLE'S REPLY IN SUPPORT OF ITS MOTION FOR
JUDGMENT AS A MATTER OF LAW (RENEWED) AND/OR A NEW TRIAL
PURSUANT TO FEDERAL RULES OF CIVIL PROCEDURE 50 AND 59**

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INTRODUCTION

Judgment as a matter of law is appropriate because no reasonable jury could have found for WARF on the issues of infringement, invalidity, and damages, and WARF fails to identify substantial evidence to support the jury's verdict on any of those issues. Alternatively, a new trial on infringement, invalidity, and damages is warranted because certain of the Court's instructions to the jury and evidentiary rulings were legally erroneous. Although WARF seeks to excuse those errors as "harmless," they unfairly prejudiced Apple's ability to present its defenses to the jury and (absent the grant of judgment in Apple's favor) can only be remedied by a new trial. For these reasons, Apple respectfully requests that the Court grant judgment as a matter of law in Apple's favor or, in the alternative, order a new trial on all issues.

ARGUMENT

I. APPLE IS ENTITLED TO JUDGMENT AS A MATTER OF LAW OR A NEW TRIAL ON WARF'S INFRINGEMENT CLAIMS.

A. The Court Should Grant JMOL In Apple's Favor Because The Jury's Infringement Verdict Was Not Supported By Substantial Evidence.

Based upon the evidence presented at trial, no reasonable jury could have found that Apple's accused products literally infringe any asserted claim of the '752 patent. As Apple demonstrated in its opening brief, WARF failed to present substantial evidence of literal infringement for three separate claim limitations. (Dkt. 678 at 11-24.) In its opposition brief, WARF fails to identify sufficient evidence to support the jury's infringement verdict with respect to any of those claims limitations. (*See* Dkt. 711 at 19-51.) The Court should accordingly enter judgment as a matter of law of no infringement.

1. **There was not substantial evidence that Apple's accused products literally satisfy the "detecting a mis-speculation" and "mis-speculation indication" elements.**

WARF's opposition confirms that no reasonable jury could have found that Apple's accused products literally satisfy the "detecting a mis-speculation" and "mis-speculation indication" limitations of each asserted claim. WARF has not identified anything in Apple's accused products that literally detects or indicates whether a mis-speculation has occurred. Instead, WARF argues that detecting and indicating a mis-speculation is merely "baked in" the generation of a Store-Hit-Younger-Load Redirect signal due to the supposed timing of instruction execution in Apple's products. (Dkt. 711 at 31.)

That is not proof of *literal* infringement, which required WARF to show that "every element" appears "*exactly* as it is in the claim." (Dkt. 646 at 8 (Closing Liability Instructions) (emphasis added).) The claims require "*detecting* a mis-speculation" and producing a "mis-speculation *indication*." (PX1.0017-.0018, at claims 1, 9 ('752 Patent) (emphases added).) Yet what Apple's products detect is simply data dependence, which may or may not result in a mis-speculation. (Dkt. 667, 10/08/2015 Trial Tr. 116:9-120:2 (August) ("Q. And so what does that mean with respect to the store-hit-younger-load signal? Does it detect data dependence or mis-speculation? A. Detects data dependence."); *see also id.* at 35:4-17 (Williams) ("It raises a signal called store-hit-younger-load redirect, which is a formulation of the two critical dependence pieces of information: The age of the instruction and the address. It does not actually ever access any kind of memory when it's formulating the dependence."); Dkt. 665, 10/06/2015 Trial Tr. 255:13-256:8 (Conte) (agreeing that the two factors for determining data dependence (i.e., program order and address overlap) are the only two criteria considered by Apple's processors when generating a Store-Hit-Younger-Load Redirect signal).) The claim

requirement of “detecting a mis-speculation” cannot be literally satisfied when what Apple actually detects is something else.

Indeed, WARF admits that Apple’s processors perform no explicit check to determine whether a mis-speculation has occurred. (Dkt. 665, 10/06/2015 Trial Tr. 256:15-25 (Conte); Dkt. 668, 10/09/2015 Trial Tr. 193:9-194:2 (Conte) (agreeing that “there is no check per se related to the load-store order violation that says that the load has accessed its data”.) Apple’s products cannot literally detect or indicate a mis-speculation when the whole premise of WARF’s argument is that Apple’s processors do not actually check whether a mis-speculation has occurred because of the supposed “timing” of instruction execution in Apple’s products. (Dkt. 668, 10/09/2015 Trial Tr. 188:24-189:3 (Conte) (“I said it was implicit. I forgot how I put it, but it’s part of the timing.”); *see also* Dkt. 711 at 29-33.)

Attempting to excuse the fact that Apple’s accused products do not check whether a mis-speculation has occurred, WARF argues that it was entitled to demonstrate that these claim limitations were satisfied “by whatever means.” (Dkt. 711 at 34.) But WARF chose not to pursue infringement “by whatever means” when it abandoned its claim for infringement under the doctrine of equivalents. (Dkt. 512-1 at 1 (“WARF will drop doctrine of equivalents and make no doctrine of equivalents arguments at trial”); *see also* Dkt. 517 at 2.) And in any case, there is no “detecting” a mis-speculation unless the processor actually checks whether a mis-speculation has occurred. Detecting something else (i.e., data dependence) that WARF contends may correspond with a mis-speculation given the timing of instruction execution in Apple’s products does not literally satisfy the requirement of “detecting a ***mis-speculation***” or producing a “***mis-speculation*** indication.”

WARF's assertion (Dkt. 711 at 33-34) that the claims of the '752 patent do not require the processor to perform an "explicit" check to determine whether a mis-speculation has occurred is incorrect for the same reasons. A processor cannot literally detect or indicate a mis-speculation absent an explicit check. Indeed, the reason that WARF has to resort to arguments about what occurs "implicitly" in Apple's products is because what Apple's products detect is data dependence, not a mis-speculation. (Dkt. 667, 10/08/2015 Trial Tr. 116:9-120:2 (August); *see also id.* at 35:4-17 (Williams); Dkt. 665, 10/06/2015 Trial Tr. 255:13-256:8 (Conte).) That is not "exactly" the same as "detecting a mis-speculation." As Dr. August explained, the fact that Apple's products detect only data dependence means that they may trigger a redirect signal earlier in the process before any mis-speculation has occurred, which allows Apple's processors to "run faster" by "fixing potential problems before they become real problems." (Dkt. 667, 10/08/2015 Trial Tr. 128:10-24 (August); *see also id.* at 35:19-23 (Williams) ("Q. Why did you design the dependency predictor in that way? A. Because it was actually a more conservative approach to the design, and from a timing perspective and a performance perspective it was actually better.").)¹

WARF argues that the fact that a Store-Hit-Younger-Load Redirect signal may be generated when no mis-speculation has occurred is irrelevant because the claims are "open-ended" such that, according to WARF, a processor is "still infringing" even if it "does more than what's recited" in the claims. (Dkt. 711 at 26-28.) But that argument only highlights the

¹ Moreover, the claim language makes clear that detecting data dependence cannot satisfy the claim requirement of detecting a mis-speculation. Detecting data dependence and detecting a mis-speculation are separate claim elements ("detecting data dependence between instructions" and "detecting a mis-speculation where a data consuming instruction dependent for its data on a data producing instruction of earlier program order is in fact executed before the data producing instruction"), and both parties' experts agreed that they are two different things. (Dkt. 665, 10/06/2015 Trial Tr. 261:15-23 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 108:24-109:19 (August).)

problem with WARF’s infringement theory. The reason that a Store-Hit-Younger-Load Redirect signal may be generated even when no mis-speculation has occurred is because the processor is not actually “*detecting* a mis-speculation” in the first place. (Dkt. 667, 10/08/2015 Trial Tr. 116:9-120:2 (August).) This is therefore not a situation where the claim limitations are “sometimes” satisfied or the accused products merely include additional features. The fact that Apple’s products may generate a Store-Hit-Younger-Load Redirect when no mis-speculation has occurred (or will ever occur) confirms that they are never “detecting a mis-speculation” at all.²

WARF also suggests that the Store-Hit-Younger-Load Redirect signal is a “mis-speculation indication” because it “is triggered after every mis-speculation occurs.” (Dkt. 711 at 34.) But that does not demonstrate that the processor is detecting or indicating a mis-speculation; a Store-Hit-Younger-Load Redirect signal will *also* be generated when no mis-speculation has occurred or will ever occur, since it is a “more conservative approach” that checks for “potential problems before they become real problems.” (Dkt. 667, 10/08/2015 Trial Tr. 35:19-23 (Williams); *id.* at 128:10-24 (August).) Thus, the fact that a Store-Hit-Younger-Load Redirect signal has been generated does not indicate that a mis-speculation has occurred. At the time the signal is generated, a mis-speculation may have occurred, may not have occurred, and may never occur.

Recognizing that a processor cannot literally detect or indicate a mis-speculation unless it checks whether a mis-speculation has occurred, WARF next argues that the reference to the “DD” cycle in the RTL code for Apple’s processors is an “explicit” check for mis-speculations. (Dkt. 711 at 34-35.) That argument, however, is entirely unsupported. The reference to “DD” in the

² WARF incorrectly asserts that “Dr. August admits that at least some of the time the Accused Processors are detecting mis-speculations.” (Dkt. 711 at 26-27.) The very testimony that WARF cites refutes that assertion. (*E.g.*, Dkt. 667, 10/08/2015 Trial Tr. 158:12-13 (“[I]t doesn’t detect a mis-speculation.”).)

source code simply refers to a pipeline stage; it does not check whether an instruction has mis-speculated. (Dkt. 668, 10/09/2015 Trial Tr. 134:9-12 (Conte) (“So if you look at the signal here, you see that DD? That’s talking about the pipeline stage that this is calculated in.”).) Indeed, even the testimony that WARF cites from Dr. Conte states that Apple’s processors do not check for mis-speculations when generating a Store-Hit-Younger-Load Redirect signal. (*Id.* at 134:16-19 (“[I]t does not have to do this check, it’s baked in.”); *see also id.* at 184:8-15 (“Q. Right. So this baked-in requirement has no explicit check; correct? A. That’s correct. Q. It’s one that Dr. -- Mr. Williams says doesn’t exist; correct? A. The explicit check does not. So inasmuch as he said that, I agree with him. The explicit check does not.”).) No reasonable jury could have found that Apple’s accused products actually check for mis-speculations when WARF’s own expert conceded that they do not.

WARF also argues that a jury could have reasonably found infringement because Dr. Conte identified two different signals in Apple’s products—one that WARF argues corresponds with detecting data dependence (“Load-Hit-Store-Queue Valid”) and another that WARF argues corresponds with detecting a mis-speculation (“Store-Hit-Younger-Load Redirect”). (Dkt. 711 at 20-21.) But the fact that WARF pointed to two signals does not mean that either detects or indicates a mis-speculation. The two signals simply address “two different situations.” (Dkt. 668, 10/09/2015 Trial Tr. 186:20-23 (Conte).)

WARF argues at length that the timing of when instructions in Apple’s accused products access the Level 1 Data Cache or the Store Queue means that a mis-speculation will “always” occur in Apple’s products when a Store-Hit-Younger-Load Redirect signal is produced. (Dkt. 711 at 32-33, 36.) But whether or not instructions access the Level 1 Data Cache or the Store Queue is beside the point because the asserted claims do not merely require that a mis-

speculation occur. They require “***detecting*** a mis-speculation” and producing a “mis-speculation ***indication***.³” (PX1.0017-.0018, at claims 1, 9 ('752 Patent) (emphases added).) Those limitations can be satisfied only if the processor actually checks to determine whether a mis-speculation has occurred—which WARF admits Apple’s accused processors do not do. (Dkt. 665, 10/06/2015 Trial Tr. 256:15-25 (Conte); Dkt. 668, 10/09/2015 Trial Tr. 184:8-15, 188:24-189:3, 193:9-194:2 (Conte).)³

Similarly, WARF contends that the jury could reasonably find the “detecting a mis-speculation” and “mis-speculation indication” limitations satisfied simply because mis-speculations occur in Apple’s products. (Dkt. 711 at 22-23.) But again the claims do not merely require that mis-speculations occur in the processor; they require “detecting” those mis-speculations and producing an “indication” that those mis-speculations have occurred. WARF relies upon Dr. Colwell’s testimony describing how ***prior art*** systems—not Apple’s accused products—detected and recovered from mis-speculations. (*Id.* (quoting Dkt. 666, 10/07/2015 Trial Tr. 51:3-8).) But with respect to the accused products, Dr. August confirmed that Apple’s technique of initiating a recovery without actually detecting a mis-speculation is different from—and, in fact, more efficient than—prior art designs that detected mis-speculations because it allows the processor to recover from mistakes earlier. (Dkt. 667, 10/08/2015 Trial Tr. 128:10-24 (August); *see also id.* at 35:19-23 (Williams).) Dr. Conte also agreed that Apple’s products do not actually check whether a mis-speculation has occurred before generating a Store-Hit-Younger-Load Redirect signal. (*See* Dkt. 665, 10/06/2015 Trial Tr. 256:15-25 (Conte); Dkt. 668,

³ Apple also disputes WARF’s contention that the Store Queue constitutes “memory.” (*See* Dkt. 678 at 14 n.1.) But Apple’s motion for JMOL does not depend upon whether or not the Store Queue is memory because WARF has not identified any signal that checks whether a mis-speculation has occurred even under WARF’s theory that the Store Queue constitutes memory. (*See* Dkt. 667, 10/08/2015 Trial Tr. 134:19-135:5 (August).)

10/09/2015 Trial Tr. 184:8-15, 188:24-189:3, 193:9-194:2 (Conte).) WARF therefore incorrectly argues that Dr. August was alone in suggesting that Apple's products do not detect mis-speculations. (Dkt. 711 at 23.) On the contrary, Dr. August's explanation was confirmed by Dr. Conte's testimony.

Finally, WARF points to a handful of Apple documents and a few selective quotations from the deposition testimony of Apple's engineers to suggest that Apple's processors detect mis-speculations. (Dkt. 711 at 24-25.) But the source code alone defines how Apple's products operate, and Dr. Conte agreed that if there is any dispute as to how Apple's products work, the source code trumps. (Dkt. 665, 10/06/2015 Trial Tr. 219:8-12 (Conte).) Indeed, Dr. Conte testified that it is not appropriate to rely on the descriptions in documents or the memory of witnesses to define the technical details of how Apple's products operate. (*Id.* at 110:9-15 (Conte) ("I understand that recollections can be hazy, so whatever they said I went back to the RTL because that's what ultimately made the chip and I checked to see that what they said matched what actually got built.")) And that is certainly true of the material that WARF cites in its opposition. For example, just after the passage from Mr. Vats' testimony that WARF cites (Dkt. 711 at 25), Mr. Vats admits that he is not an expert on the operation of Apple's LSD Predictor. (*See* Dkt. 667, 10/08/2015 Trial Tr. 275:25-276:18 (discussing Mr. Vats' testimony); *see also* Dkt. 86 (Vats Dep.) at 70:19-24.) Accordingly, no reasonable jury could rely on WARF's selective quotation from Apple's documents and testimony to conclude that Apple's products detect mis-speculations—especially where WARF's own expert admitted based upon his review of the source code that Apple's products do not actually check whether mis-speculations occur. (*See* Dkt. 665, 10/06/2015 Trial Tr. 256:15-25 (Conte); Dkt. 668, 10/09/2015 Trial Tr. 184:8-15, 188:24-189:3, 193:9-194:2 (Conte).)

In sum, no reasonable jury could have found the “detecting a mis-speculation” and “mis-speculation indication” limitations of the asserted claims satisfied because it was undisputed that Apple’s accused products do not check whether a mis-speculation has actually occurred.

2. There was not substantial evidence that Apple’s accused products literally satisfy the “particular data consuming instruction” elements.

It is undisputed that Apple’s LSD Predictor associates its counter values (which WARF alleges is the claimed “prediction”) with a “hashed” Load Tag. (Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 46:19-20 (Williams); *id.* at 164:9-11 (August).) That forecloses literal infringement of the asserted claims of the ’752 patent, which each require a prediction associated with the “particular” load instruction, not a “hashed” Load Tag corresponding to a group of load instructions. (PX1.0017, at claim 1 (’752 Patent) (“a prediction associated with the particular data consuming [load] instruction”); PX1.0018, at claim 9 (’752 Patent) (“an entry listing a particular data consuming instruction and data producing instruction each associated with a prediction”).)

At trial, WARF argued that the supposed insight from the inventors of the ’752 patent was that only a small subset of load/store pairs that have a history of mis-speculating should be prevented from speculating, which the ’752 patent says should be identified by their unique “physical address.” (Dkt. 665, 10/06/2015 Trial Tr. 298:12-299:2 (Breach) (explaining that only “a small number” of load and store instructions “were actually causing all the problems” and that the ’752 patent’s solution was to track “the exact instructions” that had a history of mis-speculating); Dkt. 668, 10/09/2015 Trial Tr. 75:18-76:10 (Mudge) (attributing the ’752 patent inventors with discovering that “there was actually only a few [load/store pairs] that you needed to really worry about”); PX1.0016, at 11:8-14 (’752 Patent) (identifying instructions in prediction table “by physical address”).) By contrast, Apple’s design does not enjoy the

supposed benefits of the claimed invention because it prevents speculation even for load instructions that have ***no*** history of mis-speculation by preventing speculation for an entire group of load instructions corresponding with a Load Tag. (Dkt. 667, 10/08/2015 Trial Tr. 152:7-12 (August).)

WARF's opposition mischaracterizes Apple's non-infringement defense as "based entirely on the occurrence of ***aliasing*** events"—i.e., instances where multiple load instructions share the same hashed Load Tag during the operation of a program. (Dkt. 711 at 42-43.) Apple's non-infringement defense, however, does not depend one way or another on the occurrence or frequency of aliasing. Apple's non-infringement defense instead rests on Apple's use of ***hashed*** Load Tags as opposed to the address for any "particular" load instruction. (Dkt. 667, 10/08/2015 Trial Tr. 164:5-11 (August).) That is a structural difference between the design of Apple's accused products and the claims of the '752 patent. The practical differences between those approaches—such as the effects of aliasing—are irrelevant to ***literal*** infringement, which required that WARF prove that "every element" appears "exactly as it is in the claim." (Dkt. 646 at 8 (Closing Liability Instructions).) Indeed, the claims of the '752 patent do not include any performance requirement. (*See* PX1.0017-.0018, at claims 1, 2, 3, 5, 6, and 9 ('752 Patent).)

WARF argues at length that Apple's use of hashed Load Tags achieves the same result as the '752 patent's technique of associating predictions with the "particular" load instruction because the frequency of aliasing is supposedly low. (Dkt. 711 at 40-44.) But that is at most an argument for infringement under the doctrine of equivalents (which WARF abandoned before trial), not literal infringement. Indeed, Dr. Conte presented that same argument concerning the frequency of aliasing in his discussion of infringement under the doctrine of equivalents in his expert report. (Dkt. 105 (Conte Infringement Report) ¶ 1028.) And WARF's opposition even

describes its infringement theory in terms of doctrine of equivalents, arguing that Apple's hashed Load Tags "perform the function" claimed in the patent. (Dkt. 711 at 38.) *See Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950) (explaining that a patentee may proceed under the doctrine of equivalents against "a device if it performs substantially the same function in substantially the same way to obtain the same result" as the claimed invention (internal quotation marks omitted)). Having abandoned its claim for infringement under the doctrine of equivalents, WARF may not now recast those same arguments as a basis for literal infringement.⁴

⁴ Even if WARF's arguments concerning the frequency of aliasing were relevant to literal infringement (which they are not), those arguments are unsupported by the record. For example, WARF argues that Mr. Williams testified that the frequency of aliasing was 0.1%. (Dkt. 711 at 24.) But what Mr. Williams actually said was that the performance impact of aliasing in Apple's products is on the order of 0.1%. (Dkt. 667, 10/08/2015 Trial Tr. 48:4-6 ("Q. And when you refer to the number of .1 percent, are you referring to performance or aliasing? A. I was actually referring to performance.").) The performance impact of aliasing is not indicative of the actual frequency of aliasing because aliasing may occur without negatively impacting performance. (*Id.* at 163:14-23 (August).)

Similarly, WARF quotes Dr. August's testimony that "Apple's processors don't always alias when they have entries in the table." (Dkt. 711 at 24 (quoting Dkt. 667, 10/08/2015 Trial Tr. 234:23-25 (August))). But that testimony was addressing the specific hypothetical posed by WARF's counsel, where Dr. August was asked to assume that there was no aliasing. (Dkt. 667, 10/08/2015 Trial Tr. 234:20-22 (August).) That hypothetical situation bears no resemblance to how Apple's processors actually operate. As Mr. Williams and Dr. August explained, Apple's operating system alone has over two million load instructions that must share the same 4,096 Load Tags—meaning that each Load Tag on average corresponds with 488 instructions. (Dkt. 667, 10/08/2015 Trial Tr. 40:8-44:20 (Williams); *id.* at 280:19-281:22 (August); *see also* Dkt. 665, 10/06/2015 Trial Tr. 271:17-272:6 (Conte) ("Q. For all of those millions of load-and-store instructions, there are 4,000 load tags that are used to identify them; correct? A. That's correct."); Dkt. 668, 10/09/2015 Trial Tr. 196:16-197:3 (Conte).)

WARF's related argument that not every software program may result in aliasing is beside the point. (*See* Dkt. 711 at 27.) As a legal matter, the frequency of aliasing does not matter for Apple's non-infringement defense, since it is the use of hashed Load Tags—not the occurrence of aliasing—that is the basis for Apple's defense. And as a factual matter, WARF's argument about individual programs ignores that those programs run on top of an operating system with millions of load instructions. (Dkt. 667, 10/08/2015 Trial Tr. 281:1-14 (August) (explaining that Apple's operating system is "the part of the phone that must be present for it to even operate").)

WARF also incorrectly argues that the frequency of aliasing in Apple's products demonstrates that Apple's products "sometimes" infringe, or are merely capable of "a non-infringing mode of operation." (Dkt. 711 at 39-40.) It was undisputed that Apple's products *always* use a hashed Load Tag instead of the address for any "particular" load instruction; it is their *only* mode of operation. (Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte) ("Q. Dr. Conte, in the Apple load-store dependency predictor, load tags are hashed 100 percent of the time, are they not? A. Yes."); Dkt. 667, 10/08/2015 Trial Tr. 46:19-20 (Williams) ("Q. Now, in the A7, what percentage of loads are hashed? A. 100 percent of them are hashed."); *id.* at 164:9-11 (August) ("Hashing is used, load tags are used 100 percent of the time.").) Whether or not that hashed Load Tag actually results in aliasing or affects performance is irrelevant to literal infringement, because the asserted claims require associating a prediction with "the particular [load] instruction." WARF's argument that there may be specific instances when a hashed Load Tag corresponds with only one instruction is just another way to restate WARF's abandoned argument for infringement under the doctrine of equivalents—i.e., that there may be some specific instances where hashing achieves substantially the same result as associating with the "particular" load instruction required by the claims. It does not demonstrate "a prediction associated with the particular data consuming instruction" as required by the asserted claims.

WARF's related argument that Apple's products supposedly infringe "until an aliasing event occurs" is incorrect for the same reasons. (Dkt. 711 at 42-43.) It is not the occurrence of aliasing that defeats WARF's claim of literal infringement; it is the fact that Apple's products use a hashed Load Tag instead of the address for the "particular" load instruction. Because Apple's processors keep track of Load Tags—not "particular" load instructions—there is *never* a prediction associated with the "particular" load instruction.

Lacking any evidence that Apple’s accused products literally satisfy the claims as written, WARF resorts to rewriting the claims to argue that “a prediction associated with the particular [load] instruction” simply requires “a fixed association” between the load instruction and the prediction. (Dkt. 711 at 38.) But Apple’s products do not have “a fixed association” (whatever that means) because the only association—whether fixed or not—is with a hashed Load Tag, not “the particular [load] instruction.” Furthermore, the claims do not merely require “a fixed association”; they require an association to “a single load instruction.” (Dkt. 559 at 4; *see also id.* at 3 (“From the court’s reading of claim 1 as a whole, it contemplates a single load instruction.”).) WARF’s new interpretation of the asserted claims as requiring “a fixed association” reads the requirement of an association with the “particular” load instruction out of the claim entirely.

For the same reasons, WARF incorrectly dismisses instances where two (or more) load instructions correspond to the same Load Tag as irrelevant to literal infringement because “it would simply mean that the prediction is thereafter associated with ***two*** Loads, ***including*** ‘the particular data consuming [Load] instruction.’” (Dkt. 711 at 39.) That argument only highlights the problem with WARF’s infringement theory. There is no prediction associated with the “particular” load instruction in the first place because it is instead associated with a hashed Load Tag that is not specific to any “particular” load instruction.

Finally, WARF argues that Apple’s technical documentation confirms that Apple meets the “particular” limitation because it supposedly says, in one instance, that the entries in Apple’s LSD Predictor “uniquely identify a given store and load in virtual address space.” (Dkt. 711 at 38 (quoting PX45.0007).) But that document does not say that the LSD Predictor actually “uniquely” identifies load and store instructions; it says that the entries in Apple’s LSD Predictor “can be thought of” that way. (PX45.0007; Dkt. 667, 10/08/2015 Trial Tr. 162:2-163:8

(August).) When describing how Apple's products work "in practice," Apple's technical documentation confirms that the LSD Predictor does not literally satisfy the "particular" limitation because it explains that the LSD Predictor actually uses a "hashed" tag for the load and store instructions. (PX45.0007.) And in any case, the definitive description of how Apple's products work comes from the source code, which the experts for both parties agreed makes clear that Apple's products always use hashing. (Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 142:10-150:5, 164:9-11 (August).)

Because it was undisputed that hashing occurs in Apple's products *all of the time*, no reasonable jury could have found that Apple's accused products literally satisfy the "particular data consuming instruction" elements required by the asserted claims.

3. There was not substantial evidence that Apple's accused products literally satisfy the "flag value" elements of claims 5 and 6.

Claims 5 and 6 of the '752 patent contain the additional requirement of a "flag value" indicating whether the certain respective data producing [store] instruction has been executed." (PX1.0018, at claim 5 ('752 Patent); *id.* at claim 6 (requiring that the table entry include "the flag value").) WARF alleges that the Armed Bit in Apple's LSD Predictor is the "flag value" required by claims 5 and 6. (Dkt. 665, 10/06/2015 Trial Tr. 187:16-188:3 (Conte); Dkt. 668, 10/09/2015 Trial Tr. 151:6-11 (Conte).) Apple's Armed Bit has two values: "0" and "1." WARF contends that an Armed Bit value of "0" indicates that the store instruction has executed and that an Armed Bit value of "1" indicates that the store instruction has not executed. (Dkt. 665, 10/06/2015 Trial Tr. 188:20-25 (Conte); Dkt. 668, 10/09/2015 Trial Tr. 151:12-152:24 (Conte).)

The fundamental flaw in WARF's infringement theory is that Apple's Armed Bit is undisputedly "0" both *before* and *after* the store instruction executes. Indeed, WARF admits that

“the Armed Bit is asserted (changed from ‘0’ to ‘1’)” before the store instruction executes and “deasserted (changed from ‘1’ to ‘0’)” after WARF claims that the store instruction has executed. (Dkt. 711 at 49.) The Armed Bit cannot “indicat[e] whether the certain respective data producing [store] instruction has been executed” when it has the *same* value (“0”) both before and after the store instruction executes.⁵

WARF’s opposition never addresses the actual problem with its infringement theory. Instead, WARF simply relies on the testimony from Dr. Conte stating that an Armed Bit value of “‘0’ means ‘that the store has already executed.’” (Dkt. 711 at 45.) But that testimony addressed only the situation where the Armed Bit is *deasserted* (i.e., changed from “1” to “0”) after WARF contends that the store instruction has executed. (*See* Dkt. 668, 10/09/2015 Trial Tr. 152:7-13 (Conte).) Dr. Conte also testified that *before* the store instruction executes the Armed Bit is *asserted*—meaning that it *starts at “0”* and is changed to “1.” (*Id.* at 151:14-152:6.) If the Armed Bit is “0” both before and after the store instruction executes, it cannot “indicat[e]” whether the store instruction has executed as claims 5 and 6 require. WARF cannot prove infringement by selectively relying on what happens *after* it claims a store instruction has executed while ignoring its own expert’s testimony about what happens *before* the store instruction has executed.

For these reasons, no reasonable jury could have found that Apple’s accused products literally satisfy the “flag value” and “flag” elements required by claims 5 and 6.

⁵ Apple disputes WARF’s infringement theory that a store instruction waiting to write data to the Store Queue has been executed. (*See* Dkt. 678 at 23.) But the Court need not address that dispute to grant Apple’s motion for JMOL because, even accepting WARF’s theory, the Armed Bit is “0” both before and after the store instruction executes.

B. Alternatively, The Court Should Grant A New Trial On Infringement.

In its opening brief, Apple requested a new trial on the grounds that: (1) the jury should have been instructed on the Court’s claim construction for the “particular” limitation; (2) the jury should have been permitted to consider Apple’s non-infringement defense with respect to the “prediction threshold detector” limitation; and (3) the jury’s infringement verdict was against the manifest weight of the evidence. WARF’s opposition brief, though lengthy, does not rebut the central premise of Apple’s request for a new trial: that the jury was improperly tasked with deciding legal issues that should have been decided by the Court, and that the Court improperly resolved factual issues that should have been decided by the jury. Thus, if the Court does not enter JMOL in Apple’s favor, it should grant a new trial.

1. A new trial is required because the jury should have been instructed as to the Court’s claim construction for “the particular data consuming instruction” limitation.

As Apple demonstrated in its opening brief, a new trial is required because the jury was not instructed as to the proper claim construction for the “particular” limitation. (*See* Dkt. 678 at 25-28.) Once the Court determined that there was a fundamental dispute between the parties as to claim scope and construed the “particular” term as referring to a “single” load instruction, the jury should have been instructed on that claim construction—as Apple requested. The Court’s failure to provide the jury with its “particular” construction was legal error that prejudiced Apple’s ability to present one of its primary non-infringement defenses. WARF’s arguments to the contrary are without merit.

a. Apple did not waive the right to have the jury instructed on the Court’s claim construction.

WARF first contends that Apple waived the right to request a claim construction for the “particular” limitation because Apple originally argued that the term should be given its plain

and ordinary meaning and therefore required no construction. (Dkt. 711 at 54-57.) WARF’s argument ignores—and misrepresents—several facts regarding how this issue was litigated and decided by this Court. There was no waiver.

As an initial matter, the Court did not find that Apple had waived the right to request a claim construction of the “particular” limitation in deciding WARF’s motion to exclude Apple’s non-infringement argument. The Court expressly recognized that some construction of the “particular” limitation was required “*unless the court were to find waiver.*” (Dkt. 559 at 2 (emphasis added).) Rather than find waiver, the Court determined that there was a fundamental dispute between the parties regarding the scope of this claim term and thus construed the term. (*Id.* at 2, 4.)

Nor did Apple waive the right to request a claim construction, as Apple was responding to events that arose during trial—including WARF’s actions that brought the claim construction dispute to the forefront during trial. For example, WARF’s infringement expert testified that it was his opinion that the “particular” limitation was not limited to a single load instruction but encompassed groups of load instructions—contrary to the “particular” term’s plain and ordinary meaning. (*See* Dkt. 678 at 27 (Apple’s opening brief collecting exemplary quotations from Dr. Conte’s trial testimony).) In its motion to exclude Apple’s non-infringement defense filed on the third day of trial, WARF devoted ten pages to arguing about the proper claim construction of the “particular” limitation. (Dkt. 550 at 3-4, 7-14; *see also id.* at 2 (“[C]laim construction is a question of law reserved for the Court.”); *id.* (“[I]f the Court should be so inclined as to rule on this claim construction issue now, the Court should reject Apple’s construction in view of the ’752 patent’s claims and specification.”); *id.* at 7 (“Apple seeks a construction that would exclude the preferred embodiment of the ’752 patent.”); *id.* at 14 (“[W]hat Apple effectively

seeks is a construction of the '752 patent that disavows all claim scope beyond the use of full physical address instruction identifiers.”). In that motion, WARF also raised new claim construction arguments that it had not previously disclosed during claim construction, expert discovery, summary judgment, or pretrial proceedings. (E.g., *id.* at 7-10 (WARF contending that the figures of the '752 patent provided examples of hashing); *see also* Dkt. 665, 10/06/2015 Trial Tr. 300:6-303:3 (Breach).)⁶

In response to WARF’s motion, Apple requested that “if the Court determines that there is an actual dispute over the meaning of a claim term, then the Court should resolve it by construing the term and providing a claim construction to the jury.” (Dkt. 552 at 10-11 (citing *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362-63 (Fed. Cir. 2008)); *see also id.* at 2 (“[S]hould the Court decide to construe this claim language, Apple requests that the Court provide a plain-meaning construction as described below.”); *id.* at 6 (“[S]hould the Court choose to construe the term, Apple requests that the Court interpret ‘the particular data consuming instruction’ to refer to the specific individual load instruction that mis-speculated.”).) Although WARF’s opposition ignores these statements, Apple clearly asked the Court to construe the “particular” limitation if it determined that there was a dispute between the parties as to the scope of that limitation. “When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.” *O2 Micro*, 521 F.3d at 1362.

In any event, WARF’s waiver argument does not address the key issue raised by Apple’s motion. Apple’s request for a new trial is not based upon a failure to construe the “particular” term at all—as described below, the Court did construe the term in its order denying WARF’s

⁶ Even now, WARF admits that the parties disputed the scope of the “particular” claim limitation. (E.g., Dkt. 711 at 58 (WARF stating that “it strongly disagrees with Apple’s proposed construction”)).

motion to exclude Apple's non-infringement defense. Instead, Apple's request for a new trial arises from the Court's decision not to provide that claim construction to the jury. As Apple explained in its opening brief (Dkt. 678 at 28), Apple promptly asked the Court to provide the jury with the Court's "particular" claim construction after the Court construed the term and did not waive any such request.

WARF avoids responding to Apple's argument that there was no waiver after the Court determined that there was a claim construction dispute between the parties and construed the disputed claim term, by arguing that "the Court expressly *declined* to provide any claim construction in its Order denying WARF's motion to exclude Apple's non-infringement argument." (Dkt. 711 at 56 (emphasis in original).) That is not what happened. The Court expressly determined that "*some construction is required* for the same reasons previously articulated by the court in its ruling on WARF's motion *in limine* 12." (Dkt. 559 at 2.) The Court further explained that:

When the parties present a fundamental dispute regarding the scope of a claim term, it is the court's duty to resolve it.... This is true even if one or both of the parties insist, *as in this case*, that the claim terms should be given their "plain" or "ordinary" meanings.

(*Id.* (quoting *O2 Micro*, 521 F.3d at 1362-63) (emphases added).) The Court then construed the "particular" limitation: "the court concludes that claim 1 discloses a prediction associated with a single load instruction, albeit one that is 'dynamic.'" (Dkt. 559 at 4; *see also id.* at 3 ("From the court's reading of claim 1 as a whole, it contemplates a single load instruction.").) And not only did the Court construe the claim term, it rejected the supposed "plain meaning" interpretation that **WARF** argued for in its motion to exclude Apple's non-infringement argument. (*Id.* at 4 ("WARF ... cannot rely on 'comprising' to expand what is claimed in subpart (a").).)

WARF repeatedly states that the Court found “there was ‘***no need***’ for a construction” (Dkt. 711 at 56 (emphasis WARF’s); *id.* at 36), but that is a misrepresentation of the Court’s opinion. The Court did not find that there was “no need” for a construction. It was quite the opposite: after determining that there was a fundamental dispute between the parties regarding claim scope and that the “particular” term therefore *did* require construction, the Court construed the “particular” term. The Court then concluded that there was “***no need for instructing the jury on the meaning of this term.***” (Dkt. 559 at 5.) But for the very same reasons that the Court determined the “particular” term required construction, the jury should have been instructed on the meaning of that claim term. Apple requested such an instruction: “[I]n light of the Court’s construction of the term ‘particular’ (Dkt. 559), Apple respectfully requests that the Court include the following language in the closing jury instructions: ‘a prediction associated with the particular data consuming instruction’ means ‘a prediction associated with a single load instruction.’” (Dkt. 572 at 1 (citing *O2 Micro*, 521 F.3d 1351).) There was no waiver.

The fact that Apple had previously asked for the jury to be instructed to apply the “particular” term’s plain and ordinary meaning does not change this. As the Court agreed, Apple’s understanding and application of the “particular” term was consistent with the term’s plain and ordinary meaning. (Dkt. 559 at 4 (construing “the particular data consuming instruction” to mean “a single load instruction” and noting that “this language is consistent with the plain meaning of the claim terms ‘the’ and ‘the particular’”).) But during trial, it became apparent that WARF’s expert was interpreting “particular” in a way that was contrary to its plain and ordinary meaning, and WARF’s motion to exclude Apple’s non-infringement defense highlighted this claim construction dispute between the parties. *See supra* pp. 17-18. The Court accordingly determined that, even though “particular” did have its plain and ordinary meaning in

the asserted claims (as Apple had always maintained), a claim construction was required because the parties clearly disputed the proper claim scope at trial. The jury should have been told of that construction, as Apple requested during trial, because questions of claim scope are for the Court to decide and should not be left to the jury to resolve. *See O2 Micro*, 521 F.3d 1352-53; *see also Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1321 (Fed. Cir. 2009) (“Once a district court has construed the relevant claim terms, and unless altered by the district court, then that legal determination governs for purposes of trial. No party may contradict the court’s construction to a jury.”).

The cases relied upon by WARF (Dkt. 711 at 54-55) to support its waiver argument are easily distinguishable. In each of WARF’s cited cases, the party—unlike Apple here—did not request a construction until *after* trial. *See Lighting Ballast Control LLC v. Philips Electronics N. Am. Corp.*, 790 F.3d 1329, 1341 (Fed. Cir. 2015) (finding that “ULT waived its right to seek a new claim construction because ULT did not seek that construction until *after trial*” (emphasis added)); *Enovsys LLC v. Nextel Communications, Inc.*, 614 F.3d 1333, 1344-45 (Fed. Cir. 2010) (finding waiver because “at no time *before or during trial* did Sprint Nextel object to the district court’s claim construction, request clarification, or offer the construction it now advances on appeal” and because Sprint Nextel “wait[ed] until *after* the jury returned its verdict” (emphases added)); *Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683, 694 (Fed. Cir. 2008) (finding waiver because “Qualcomm … failed to offer its proposed construction of ‘networks’ *at or prior to trial*, and we reject such arguments raised for the first time *after* the jury verdict” (emphases added)); *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1360 (Fed. Cir. 2004) (finding waiver because Aradigm “**never** requested that the district court construe any terms in claim 6 and **never** offered a construction of claim 6,” and further noting that “[o]nly after the presentation of all of the

evidence to the jury did Aradigm even suggest that claim construction might be helpful to determine the proper scope of the claimed invention” (emphases added)).

Indeed, the Federal Circuit has explained that, “[c]onsistent with circuit precedent, we apply the doctrine of waiver when the party failed to raise the claim construction argument until *after trial.*” *Enovsys*, 614 F.3d at 1344 n.6 (emphasis added). In this case, Apple both provided a proposed claim construction and asked the Court to instruct the jury as to that claim construction during trial. (Dkt. 552 at 2, 6-11; Dkt. 572 at 1.) Moreover, unlike the cases cited by WARF, the Court here determined during trial that there was a fundamental dispute between the parties as to claim scope and construed the “particular” term to resolve that dispute. Apple’s request to provide that construction to the jury was not waived. *See, e.g., Creative Internet Advertising Corp. v. Yahoo!, Inc.*, 476 Fed. Appx. 724, 728-29 (Fed. Cir. 2011) (finding no waiver where “[t]he district court’s refusal to instruct the jury on the question whether the claim required all three elements to operate on the same message had the effect of leaving a critical question of claim construction to the jury”).

b. WARF would not be entitled to JMOL under the Court’s claim construction.

WARF next contends that no new trial is required because, even if the Court had provided its claim construction to the jury, WARF would have been entitled to JMOL of infringement with respect to the “particular” limitation. (Dkt. 711 at 58-62.) More specifically, WARF argues that “the undisputed evidence presented by both parties at trial establishes that Apple’s proposed limitation of ‘a prediction associated with *a single* load instruction’ is a condition that is ‘regularly, if not, always met’ in the Accused Processors.” (Dkt. 711 at 58-59 (citation omitted, emphasis WARF’s).) However, for the reasons explained in Section I.A.2 above, not only does the evidence support a finding of non-infringement, but a reasonable jury

could only have found no infringement under the proper construction of the “particular” limitation. WARF’s repeated arguments opposing a new trial are without merit.

First, WARF’s suggestion that Dr. August testified that Apple’s products are capable of operating in a special “mode of operation in which aliasing does not occur” (Dkt. 711 at 60) is incorrect and unsupported by the record. The undisputed evidence at trial demonstrated that the accused products sold by Apple are only capable of operating in a single “mode,” where the HID1 bits are set so as to enable the LSD Predictor to operate normally. (*E.g.*, Dkt. 670, 10/13/2015 Trial Tr. 64:10-15 (Conte) (“Q. Professor Conte, I have a question. When you said you can switch the mode, do you mean consumers can switch the mode? A. Not at all. This is switched in the operating system. So in order to do this, we had to use a specially modified phone that Apple provided.”); Dkt. 672, 10/15/2015 AM Trial Tr. 10:1-15 (Williams) (explaining that Apple provided WARF with special engineering devices that permitted WARF to test features not available in Apple’s commercial products); Dkt. 670, 10/13/2015 Trial Tr. 209:23-210:2 (Reinman).) There is no “mode” in which aliasing is prohibited. On the contrary, Apple’s LSD Predictor *always* uses hashing to generate the Load Tags, *always* associates predictions with load instructions collectively (i.e., in groups designated by Load Tags) rather than individually (i.e., for a “particular” instruction), and *always* has the possibility of aliasing. (*E.g.*, Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte) (“Q. Dr. Conte, in the Apple load-store dependency predictor, load tags are hashed 100 percent of the time, are they not? A. Yes.”); Dkt. 667, 10/08/2015 Trial Tr. 46:19-20 (Williams) (“Q. Now, in the A7, what percentage of loads are hashed? A. 100 percent of them are hashed.”); *id.* at 164:9-11 (August) (“Hashing is used,

load tags are used 100 percent of the time.”).⁷ The fact that WARF can imagine a hypothetical scenario in which aliasing may not occur in a specific instance does not alter these facts or how Apple’s products operate; nor does it provide the “particularity” required by the asserted claims.

Second, WARF suggests that infringement depends upon which “software program” is running on the accused products. (*See* Dkt. 711 at 60.) That is incorrect, because Apple’s LSD Predictor *always* associates predictions with groups of load instructions (rather than a “particular” load instruction) by using hashed Load Tags. That is true regardless of how many load instructions are contained within a particular software program. (*E.g.*, Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 46:19-20 (Williams); *id.* at 164:9-11 (August).) Nevertheless, the evidence at trial demonstrated that Apple’s iOS operating system, which runs on each of Apple’s accused products, contains millions of load and store instructions but there are only 4,096 available Load Tags. (*E.g.*, Dkt. 665, 10/06/2015 Trial Tr. 271:17-272:6 (Conte) (“Q. For all of those millions of load-and-store instructions, there are 4,000 load tags that are used to identify them; correct? A. That’s correct.”); Dkt. 668, 10/09/2015 Trial Tr. 196:16-197:3 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 40:8-44:20 (Williams); *id.* at 280:19-281:22 (August).) Thus, regardless of which program is running, aliasing will occur because there are still only 4,096 Load Tags available for millions of instructions.

⁷ WARF repeatedly conflates “hashing” with “aliasing” (*e.g.*, Dkt. 711 at 59-60), but they are distinct concepts. Hashing refers to the mathematical algorithm that the LSD Predictor uses to create a compressed Load Tag from part of an instruction address (and architectural register number), whereas aliasing refers to the situation where two (or more) load instructions use the same Load Tag in the LSD Predictor table during the operation of a program. (*See* Dkt. 668, 10/08/2015 Trial Tr. 41:2-42:1 (Williams) (explaining Apple’s hashing algorithm); *id.* at 139:22-140:2 (August) (“Q. What is a hash function? A. It takes the full name of the location of the load instruction and creates an abbreviated name. That’s what a hash function does.”); *id.* at 221:15-222:1 (August) (explaining that “aliasing” is the “dynamic process of different loads in the same group accessing the table and getting an incorrect prediction”).)

Third, WARF’s argument that there is a low frequency of aliasing (Dkt. 711 at 60-61) does not—and cannot—demonstrate infringement. As an initial matter, WARF’s suggestion that aliasing occurs only 0.1% of the time in Apple’s accused products is incorrect. As Mr. Williams explained, the 0.1% figure referred to performance impact, not how often aliasing occurs. (Dkt. 667, 10/08/2015 Trial Tr. 48:4-6 (Williams) (“Q. And when you refer to the number of .1 percent are you referring to performance or aliasing? A. I was referring to performance.”).)⁸ But the frequency of aliasing does not matter for purposes of determining infringement. Regardless of how often or how many load instructions alias to the same Load Tag in the table for a given program running on an iPhone or iPad, Apple’s LSD Predictor *always* uses hashing to generate the Load Tags—as Dr. Conte conceded (agreeing that hashing occurs “100 percent of the time” (Dkt. 665, 10/06/2015 Trial Tr. 287:1-4))—and *never* associates a prediction with “the particular” load instruction. Indeed, the mere fact that any aliasing occurs at all demonstrates that Apple’s products lack the “particularity” required by the asserted claims.

Fourth, WARF concludes—without citation—that “Apple does not dispute that, even if all Load Tags in a hypothetical program eventually alias, each ‘prediction’ is still ‘associated with’ one and only one Load until the associated Load Tag aliases for the first time.” (Dkt. 711

⁸ WARF cites Dr. August’s testimony where he was asked about Mr. Williams’ deposition testimony, but notably does not mention Mr. Williams’ clarification of that testimony at trial. (*See* Dkt. 711 at 61.) WARF also ignores Dr. August’s testimony immediately following WARF’s selective quotation, where Dr. August disputed WARF’s mischaracterization of Mr. Williams’ testimony. (Dkt. 668, 10/08/2015 Trial Tr. 228:9-15 (August) (“Q. And you didn’t say to the Ladies and Gentleman of the Jury that Mr. Williams testified that aliasing, which causes more than one load to be associated with a prediction, only occurs 0.1 percent of the time; correct?” A. I disagree with the statement you made in your question.”); *see also id.* at 222:14-18 (“Q. And, in fact, based on Apple’s full regression test for the 12-bit hashing scheme, the average amount of aliasing was in a similar range of 0.1 percent; correct? A. So to be clear, they’re talking about performance impact of aliasing, not the aliasing rate.”). In fact, Dr. August carefully distinguished between the frequency of aliasing and the performance impact of aliasing (which may be small, even if the frequency of aliasing is high). (*Id.* at 163:9-23 (August).)

at 43.) That is simply not true. Apple has consistently maintained that its accused products fail to satisfy the “particular” limitation because they always associate predictions with groups of instructions as determined by the hashed Load Tags, and never associate a prediction “with the particular load instruction.” (*See, e.g.*, Dkt. 678 at 17-21; Dkt. 552 at 4-6.)

Finally, WARF contends that it should be granted JMOL of infringement because Apple’s accused products are at least “capable of” operating in a mode that infringes or “sometimes infringes.” (Dkt. 711 at 61-62.) Neither statement is correct. As the evidence demonstrated at trial, Apple’s accused products have only one mode of operation and that mode always uses hashing to generate Load Tags that correspond to groups of load instructions. (Dkt. 665, 10/06/2015 Trial Tr. 287:1-4 (Conte); Dkt. 667, 10/08/2015 Trial Tr. 46:19-24 (Williams) (“Q. In the A7, both Cyclone and Typhoon, what percentage of the load tags represent groups of instructions? A. Every single tag represents a group.”); *id.* at 139:17-21, 164:9-11 (August) (“A load tag is basically a name for a group of loads.”).) And once a Load Tag is generated, the LSD Predictor cannot determine from that Load Tag which instruction address was used to generate it. (Dkt. 667, 10/08/2015 Trial Tr. 140:3-12 (August).) The record was also clear that, even if (hypothetically) aliasing never occurred during the operation of a specific program, Apple’s LSD Predictor still works in the same way: it associates each prediction with a hashed Load Tag, rather than a “particular” load instruction. (Dkt. 668, 10/08/2015 Trial Tr. 149:22-25 (August) (“Q. And in the actual LSD predictor, the code that we were looking at, what is it that the predictor associates with its dependency prediction? A. With load tags. Groups of loads.”); *id.* at 164:9-11 (“Hashing is used, load tags are used 100 percent of the time.”).) Thus, Apple’s

LSD Predictor **never** has the particularity required by the asserted claims, even in the hypothetical scenarios urged by WARF.⁹

For these reasons and those discussed in Section I.A.2 above, the Court should enter JMOL of non-infringement because no reasonable jury could have found that Apple's accused products satisfy the "particular" limitation. At a minimum, however, the jury should have been permitted to decide the issue of infringement after being instructed as to the Court's claim construction for the "particular" term. The only way to do that now is through a new trial.

c. Apple was prejudiced by the Court's decision not to provide its claim construction to the jury.

WARF next argues that "the Court may deny Apple's request for a new trial if the Court simply finds there was substantial evidence to support the jury's verdict under Apple's construction." (Dkt. 711 at 62.) That is not correct. "An erroneous instruction regarding claim interpretation that affects the jury's decision on infringement is grounds for a new trial. A party seeking to alter a judgment based on erroneous jury instructions must establish that 'those instructions were legally erroneous,' and that 'the errors had prejudicial effect.'" *Ecolab Inc. v. Paraclipse, Inc.*, 285 F.3d 1362, 1373 (Fed. Cir. 2002) (citations omitted).¹⁰

⁹ WARF's cited cases (Dkt. 711 at 61-62) are thus inapposite, because Apple's accused products are not "capable of" operating in different "modes" and this is not a case of "sometimes infringing." As discussed above (pp. 10-12), WARF's argument that Apple's products "sometimes" infringe is just another way to restate WARF's abandoned claim of infringement under the doctrine of equivalents. Because WARF explicitly abandoned any reliance on the doctrine of equivalents at trial (*see* Dkt. 512-1 at 1), it is irrelevant whether there is any argument that Apple's use of hashed Load Tags could arguably achieve substantially the same result as associating predictions with the "particular" load instruction required by the claims.

¹⁰ WARF erroneously states that, in *O2 Micro*, the Federal Circuit "found that the facts of that particular case were insufficient to conclude that substantial evidence supported the verdict under the new construction." (Dkt. 711 at 62.) In that case, the Federal Circuit did not look only for substantial evidence to support the verdict after it had ruled that the failure to construe a disputed claim term was erroneous. Rather, it noted that "the infringement evidence [was not] **clearly** in favor of either party" and remanded for a new trial because it could not "conclude that

The failure to provide the jury with the Court’s claim construction for the “particular” term was legal error, because it is a court’s duty—not the jury’s—to construe the scope of the claims. *See O2 Micro*, 521 F.3d at 1352-53. Once the Court determined that there was a “fundamental dispute” between the parties regarding claim scope with respect to the “particular” term (Dkt. 559 at 2), the jury should have been instructed as to the proper meaning of that term. “[L]eaving a central question of claim construction to the jury” is legal error. *Creative Internet Advertising*, 476 Fed. Appx. at 728-29.

Apple was prejudiced by that error because it hampered Apple’s ability to present its non-infringement defense with respect to the “particular” limitation. Without the Court instructing the jury that “the particular data consuming instruction” claim language referred to a “single” load instruction, the jury could have believed WARF’s expert’s testimony that the “particular” limitation did not require only “one” load instruction and was literally satisfied by a prediction associated with groups of load instructions. (*See, e.g.*, Dkt. 665, 10/06/2015 Trial Tr. 145:18-149:6, 157:1-3, 158:5-14, 169:5-18 (Conte).)¹¹ Apple was also prejudiced by its inability to cross-examine Dr. Conte on the meaning (or lack of meaning) of the word “particular” that he applied in his infringement analysis (*see* Dkt. 665, 10/06/2015 Trial Tr. 266:10-268:18) and by

the lack of a construction did not result in harm.” *O2 Micro*, 521 F.3d at 1363 n.4 (emphasis added).

¹¹ WARF suggests that Apple was required to object to each piece of Dr. Conte’s testimony in which he referred to the “particular” term. (*See* Dkt. 711 at 64.) It was not. Apple asked the Court to instruct the jury as to the proper construction of the “particular” term, and that request was denied. That was sufficient to maintain Apple’s position. *See, e.g., O2 Micro*, 521 F.3d at 1359 (finding no need for additional objections to preserve claim of error for failing to instruct jury on proper claim construction after the issue had been decided by the district court); *Orix Credit Alliance, Inc. v. Taylor Machine Works, Inc.*, 125 F.3d 468, 477-78 (7th Cir. 1997) (finding that the defendant had not waived its argument on appeal regarding jury instructions where the defendant’s counsel had provided proposed instructions and objected on the record to the court’s refusal to give its proposed instructions). Dr. Conte’s testimony illustrates how Apple was prejudiced by the Court’s failure to instruct the jury as to the proper claim construction.

the Court’s warning that Dr. August could not “over emphasize[e] the importance of the terms ‘the particular’” in his non-infringement analysis (Dkt. 559 at 4)—prejudice that Apple pointed out in its opening brief (Dkt. 678 at 28 n.4) and to which WARF does not respond. This case is thus unlike *Kinetic Concepts, Inc. v. Blue Sky Medical Group, Inc.*, 554 F.3d 1010 (Fed. Cir. 2009), where the court found no prejudice because it “perceive[d] no danger under the circumstances of th[at] case that the jury may have used an incorrect construction of ‘wound’ that might have prejudiced Defendants.” *Id.* at 1019. Here, without guidance from the Court as to the meaning of the “particular” term, the jury may well have applied—and most likely did apply—the wrong claim construction for that term as urged by WARF and its infringement expert. At a minimum, Apple was prejudiced because the “risk of confusing the jury is high when experts opine on claim construction.” *CytoLogix Corp. v. Ventana Med. Sys., Inc.*, 424 F.3d 1168, 1172 (Fed. Cir. 2005).

WARF’s suggestion that the Court provided a “curative instruction” that “eliminate[ed] any prejudice” (Dkt. 711 at 64) is off-point. The Court told the jury that:

You will apply it based on what I have -- I will direct you [the jury] is a specific meaning, otherwise you will apply it based on a general understanding by those skilled in the art. So no expert has the authority to tell you what something means. They could tell you what something means to those skilled in the art if they disclose that and its part of their opinion in this case, but that’s not where we are.

(Dkt. 665, 10/06/2015 Trial Tr. 156:15-23.) Importantly, the Court never instructed the jury that the “particular” term in the asserted claims referred to a “single” load instruction. Without that construction from the Court, the jury was tasked with determining what the plain and ordinary meaning of the “particular” term was to a person of ordinary skill in the art—and had competing expert testimony to consider in resolving that claim construction dispute. The Court’s “curative instruction” thus did not eliminate the prejudice to Apple.

Nor was the failure to provide the jury with the correct claim construction for the “particular” term merely “harmless error,” as WARF contends (Dkt. 711 at 65). A jury instruction that fails to provide the correct claim construction is only “harmless” “[w]hen the error in [the] jury instruction **could not have changed the result.**” *Ecolab*, 285 F.3d at 1374 (emphasis added) (internal quotation marks omitted). Had the jury been instructed that the “particular” claim term required a “single” instruction, it certainly could have (and should have) found no literal infringement. Apple was therefore prejudiced. *See, e.g., Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1307-08 (Fed. Cir. 2007) (remanding for new trial where the court “err[ed] in failing to limit the localized system to one with a range of a few feet” and the defendant “was prejudiced by the district court’s [claim construction] error because” it argued that “several of its devices operate with a range greater than ‘a few feet’”); *Ecolab*, 285 F.3d at 1376 (“Because we find sufficient evidence to support a jury verdict of infringement under the correct interpretation of claim 16, we conclude that Ecolab suffered prejudice by the erroneous jury instruction.”).

Accordingly, unless the Court grants JMOL in Apple’s favor, the only appropriate remedy is a new trial where the jury is properly instructed that the “particular” term in the asserted claims refers to a “single” load instruction. *See, e.g., Enzo Biochem Inc. v. Applera Corp.*, 780 F.3d 1149, 1157 (Fed. Cir. 2015) (“The district court erred in construing the disputed claims of the patent-in-suit to cover both direct and indirect detection. Accordingly, we reverse the district court’s claim construction, vacate the district court’s finding of infringement, and remand to the district court with instruction to determine, consistent with the analysis in this opinion, whether the accused product infringes.”); *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1319 (Fed. Cir. 2014) (“[W]e have now construed the disputed claim term so as to require

anonymity.... However, the jury was not presented with the question of whether [the accused product] infringes the asserted claims under a construction requiring anonymity. Thus, we remand for further proceedings to determine whether [the accused products] provide anonymity.”); *Seachange Int’l, Inc. v. C-COR Inc.*, 413 F.3d 1361, 1381-82 (Fed. Cir. 2005) (concluding that the district court’s failure to provide the defendant’s requested claim construction was prejudicial error and required a new trial).

A new trial on infringement based upon the “particular” claim construction, moreover, should also include a new trial on invalidity. The jury was instructed to apply the same claim constructions for purposes of determining both infringement and invalidity. (Dkt. 646 at 4-5 (Closing Liability Jury Instructions).) If a claim construction for the “particular” term were provided to the jury, the jury should have the opportunity to apply that construction on both issues. While WARP claims that a narrower construction would not affect the jury’s finding of no invalidity (Dkt. 711 at 97), that is a speculative and unfair assumption to make. The parties repeatedly tied the issues of infringement and invalidity together by pointing out (alleged) inconsistencies between the two. *See infra* pp. 74-77.

Moreover, a claim construction for the term “particular,” especially where the jury was previously instructed to apply that term’s plain and ordinary meaning, would provide clarity to the jury for determining invalidity as well as infringement. Indeed, the parties agreed that the *only* limitation of claim 1 that was missing from Apple’s primary prior art reference (Hesson) was the limitation requiring “a prediction associated with the particular data consuming [load] instruction.” (Dkt. 668, 10/09/2015 Trial Tr. 69:21-73:1 (Mudge).) The jury should have been permitted to consider whether it would have been obvious to incorporate that element into Hesson under the correct claim construction. Accordingly, the issues of infringement and

invalidity are not “distinct and separable,” and a new trial on infringement due to the “particular” claim construction also requires a new trial on invalidity. *See Witco Chem. Corp. v. Peachtree Doors, Inc.*, 787 F.2d 1545, 1549 (Fed. Cir. 1986) (“A partial new trial is inappropriate and ‘may not properly be resorted to unless it clearly appears that the issue to be retried is so distinct and separable from the others that a new trial of it alone may be had without injustice.’” (quoting *Gasoline Prods. Co. v. Champlin Ref. Co.*, 283 U.S. 494, 500 (1931)).

d. The Court’s claim construction was correct and is supported by the intrinsic record.

Lastly, WARF contends that a new trial is not warranted because the Court’s claim construction for the “particular” limitation, which Apple asked to have provided to the jury, was “incorrect” and “unsupported by the intrinsic record.” (Dkt. 711 at 65.) As explained below, however, the Court’s claim construction equating the “particular” load instruction in the asserted claims with a “single” load instruction is consistent with the ordinary meaning of the claim language, is supported by the specification, and properly gives meaning to the word “particular” in the asserted claims. The Court’s claim construction was thus correct and should have been provided to the jury.¹²

i. Consistent with the ’752 patent’s claims

To begin with, the Court’s claim construction is consistent with the claim language. Claim 1 of the ’752 patent recites:

¹² The fact that WARF continues to dispute the claim construction that the Court adopted for the “particular” limitation, and that Apple asked to have provided to the jury, underscores the need for the jury to have been instructed on this issue. WARF clearly disagrees with Apple’s and the Court’s claim construction, as reflected in its trial presentation and its expert’s testimony before the jury and as further confirmed in its post-trial briefing. With no claim construction provided to the jury for the “particular” term, WARF was free to—and did—argue to the jury that “the particular” load instruction in the asserted claims was not limited to a “single” load instruction. (See Dkt. 678 at 27 (collecting examples of such argument).) The jury should not have been left to resolve this claim construction dispute.

In a processor capable of executing program instructions in an execution order differing from their program order the processor further having a data speculation circuit for detecting data dependence between instructions and detecting a mis-speculation where a data consuming [load] instruction dependent for its data on a data producing [store] instruction of earlier program order is in fact executed before the data producing [store] instruction, a data speculation decision circuit comprising:

- a) a predictor receiving a mis-speculation indication from the data speculation circuit to produce a prediction associated with the particular data consuming [load] instruction and based on the mis-speculation indication; and
- b) a prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range.

(PX1.0017, at 14:36-52 ('752 Patent) (emphases added).)¹³

The parties agreed that the phrase “the particular data consuming instruction” refers back to “a data consuming instruction” described in the preamble—in other words, it refers to the data consuming instruction that mis-specified. That is clear because “a data consuming instruction” in the preamble provides the antecedent basis for “the particular data consuming instruction” mentioned in the “predictor” element. That is true even without the word “particular,” as it is the word “the” that indicates that the second appearance of “data consuming instruction” is referring back to the first “data consuming instruction” which appears in the preamble. *See, e.g., Baxter Healthcare Corp. v. Fresenius Med. Care Holdings, Inc.*, No. C 07-1359 PJH, 2009 WL 330950, at *13 (N.D. Cal. Feb. 10, 2009), *aff'd*, 465 F. App'x 955 (Fed. Cir. 2012) (“[A] foundation or antecedent basis must be laid for each element recited. This can be done, usually in the preamble, by introducing each element with the indefinite article ('a' or 'an'). Subsequent mention of the element is to be modified by the definite article or by 'said' or 'the said,' thereby making later

¹³ Similarly, claim 9 recites: “a prediction table communicating with the data speculation circuit to create an entry listing a particular data consuming instruction and data producing instruction each associated with a prediction when a misspeculation indication is received.” (PX1.0018, at 16:17-21 ('752 Patent).)

mention(s) of the element unequivocally referable to its earlier recitation.” (quoting Mills, et al., Patent Law Fundamentals § 14.13 (2008))).

As this Court has previously noted, “WARF’s interpretation would stop there.” (Dkt. 559 at 3; *see also* Dkt. 711 at 68 (WARF arguing that “the particular” was “merely intended to invoke antecedent basis”); *id.* at 66-67.) But the word “particular” must have some additional meaning; otherwise, there would be no reason for including it in the asserted claims. As Apple has maintained, the word “particular” means precisely what it says: that the prediction must be associated with the “particular” load instruction that mis-specified. In other words, the prediction must be associated with the “single” load instruction that caused the mis-speculation. (Dkt. 559 at 4.)

WARF also argues that the Court’s claim construction would “slyly imbue the word ‘particular’ with a special meaning.” (Dkt. 711 at 67.) It does not. The Court’s claim construction simply gives *some* meaning to the word “particular” and appropriately gives the word its plain and ordinary meaning at the time of the ’752 patent application. (*See, e.g.*, Dkt. 552-1, Webster’s Third New International Dictionary 1646-47 (1993) (defining “particular” as “of, relating to, or being a *single* definite person or thing as distinguished from some or all others” (emphasis added)); Dkt. 552-2, Oxford Encyclopedic English Dictionary 1060 (3d ed. 1996) (defining “particular” as “relating to or considered as *one* thing or person as distinct from others; *individual*” (emphases added)).) The ’752 patent uses the term “particular” according to this plain and ordinary meaning, and a person of ordinary skill in the art reading the ’752 patent would understand “particular” in this way. WARF points to alternative ways that the claims could have been drafted. (Dkt. 711 at 68.) But those alternatives do not address the relevant question, which is what the claims as drafted actually say. *See Phillips v. AWH Corp.*, 415 F.3d

1303, 1312 (Fed. Cir. 2005) (en banc) (“The second paragraph [of 35 U.S.C. § 112] requires us to look to the language of the claims to determine what ‘the applicant regards as his invention.’”). And in any case, WARF’s alternative language is unnecessary to limit the claimed invention to a prediction associated with a single instruction because the claims already require a prediction associated with the “particular” data consuming instruction.

WARF further contends that the claims’ use of the word “comprising” means that the phrase “the particular data consuming instruction” requires only “a prediction associated with *at least* the particular Load that mis-specified.” (Dkt. 711 at 69 (emphasis in original).) Again, WARF’s argument misapplies the law. Claim 1 recites a “data speculation decision circuit” “comprising” two elements: (a) a “predictor,” and (b) a “prediction threshold detector.” Apple does not contend that the presence of any additional elements beyond (a) and (b), such as a third element (c), means that there can be no infringement. But, as this Court previously ruled, “WARF … cannot rely on ‘comprising’ to expand what is claimed in subpart (a).” (Dkt. 559 at 4.) The claim still requires the element recited in subpart (a), with all the limitations that WARF placed upon it when drafting the claim: “a predictor receiving a mis-speculation indication from the data speculation circuit to produce *a prediction associated with the particular data consuming [load] instruction* and based on the mis-speculation indication.” (PX1.0017, at claim 1 ('752 Patent) (emphasis added).) The Court’s claim construction equating “the particular data consuming instruction” with a “single” load instruction is fully consistent with the claims’ use of the word “comprising.”

ii. Supported by the '752 patent's specification

The Court’s claim construction is also supported by the specification of the '752 patent and does not exclude any preferred embodiment. The specification repeatedly describes

associating a prediction with a single load instruction that is identified by its physical address. For example, the specification states the following:

- “The first column [of the prediction table] *identifies, by physical address, an instruction* that is ready for its operation to be performed” (PX1.0016, at 11:10-11 ('752 Patent) (emphasis added).)
- “Referring to FIG. 4. at decision block 100, the predictor circuit 33 reviews a prediction table 44 shown generally in FIG. 5 to see if *the particular instruction 8.2 identified by its physical address* is in the prediction table 44.” (PX1.0016, at 11:3-7 ('752 Patent) (emphasis added).)
- “If *the particular data consuming instruction* is not in the prediction table, no further inquiry into the prediction table is required.” (PX1.0012, at 4:51-53 ('752 Patent) (emphasis added).)
- “At decision block 324, if the replace flag equals 1 indicating that there are absolutely no prediction table entries left that match either one of the instructions involved in this mis-speculation, then at process block 326 a prediction table entry is allocated and at process block 328 *the addresses of the LOAD and STORE instructions are inserted in the prediction table 44* and the prediction 109 is set to the default value, typically zero.” (PX1.0017, at 13:37-45 ('752 Patent) (emphasis added).)
- “Next at decision block 406, prediction table 44 is examined for *this particular LOAD instruction.*” (PX1.0017, at 13:55-57 ('752 Patent) (emphasis added).)

The Court’s claim construction of the “particular” load instruction as referring to a “single” load instruction does not exclude a preferred embodiment. Although WARF

contends—in a theory not disclosed during claim construction, expert discovery, summary judgment, or pretrial proceedings—that the figures of the patent somehow provide examples of hashing or aliasing (Dkt. 711 at 70-72), they do not. Figure 1 uses “XX1,” “XX2,” etc. as shorthand to identify locations in memory. The specification makes clear that those “XX1” addresses are shorthand representations of actual physical addresses:

Referring now to FIG. 1, an ILP processor 10 suitable for use with the present invention includes a memory 12 having a portion 14 holding a stored program 16 at a plurality of ***physical addresses 19*** here depicted as xx1-xx6 where the values xx indicate some higher ordered address bits that may be ignored in this example.

(PX1.0013, at 6:62-67 ('752 Patent) (emphasis added); *see also* Dkt. 239 (Colwell Dep.) at 14:24-16:9 (explaining that “xx” are simply “stand-ins for what those bit patterns are ***that one of ordinary skill would know had to be there***, but presumably aren’t needed for whatever example are going to be used” (emphasis added)).) As this passage explains, the “xx” merely indicates that the higher order bits “may be ignored in this example,” not that the bits are compressed or hashed in any way. Similarly, Figure 2 illustrates “a source code program and its corresponding object code instructions stored in memory order at ***physical addresses*** in memory.” (PX1.0013, 5:44-46 ('752 Patent) (emphasis added).) Again, the '752 patent makes clear that the “xx” does not indicate hashing. On the contrary, the patent emphasizes that those values (“xx8” and “xx10”) are shorthand for “logical addresses within the memory 12,” “which may be used to identify the instructions uniquely.” (PX1.0014, at 8:59-61 ('752 Patent).)

Nor does Figure 5 illustrate or suggest the use of partial addresses or hashed tags. Rather, the description of that figure expressly states that the “particular” instruction in Figure 5’s prediction table is “identified by its physical address”: “Referring to FIG. 4, at decision block 100, the predictor circuit 33 reviews a prediction table 44 shown generally in FIG. 5 to see ***if the***

particular instruction 8.2 identified by its physical address is in the prediction table 44.” (PX1.0016, at 11:3-7 (’752 Patent) (emphasis added).)

The specification nowhere discloses or describes the use of hashing or aliasing. (See Dkt. 665, 10/06/2015 Trial Tr. 301:14-15 (Breach) (’752 inventor admitting that “in the patent ... I don’t think we just, you know, explicitly say anything like this is what we do”.) Instead, the only purported support for WARF’s new reading of the specification comes from the self-serving testimony of one of the named inventors at trial. (See Dkt. 711 at 72-73.) WARF did not disclose this testimony or any corroborating evidence during discovery and, in any event, the inventor’s testimony purporting to interpret the patent should not be relied upon to construe the claims. *See, e.g., Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379 (Fed. Cir. 2000) (“[L]itigation-derived inventor testimony in the context of claim construction ... is entitled to little, if any, probative value.”); *see also Bell & Howell Document Mgmt. Prods. Co. v. Altek Sys.*, 132 F.3d 701, 706 (Fed. Cir. 1997) (“The testimony of an inventor ... concerning claim construction is thus entitled to little or no consideration. The testimony of an inventor is often a self-serving, after-the-fact attempt to state what should have been part of his or her patent application....”). This is especially true where, as here, the inventor’s testimony is contradicted by the plain and ordinary meaning of the claim language as well as the specification. *See, e.g., Phillips*, 415 F.3d at 1318 (“[A] court should discount [extrinsic evidence] that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.” (internal quotation marks omitted)); *see also Roton Barrier, Inc. v. Stanley Works*, 79 F.3d 1112, 1126 (Fed. Cir. 1996) (“We have previously stated that an inventor’s after-the-fact testimony is of little weight compared to the clear import of the patent disclosure itself.” (internal quotation marks omitted)).

Finally, WARF's assertion that "there is no dispute in the record that the preferred embodiment disclosed in the '752 patent's specification uses partial address Load identifiers, or that such partial address Load identifiers result in aliasing" (Dkt. 711 at 74) is completely unfounded. Contrary to WARF's statement that "[n]o Apple witness ever disputed these facts at any time throughout this case" (*id.* at 74-75), Apple's expert Dr. August clearly explained in his non-infringement report that "[t]he '752 patent describes associating a prediction with **a particular load instruction** by creating a prediction table having **one load instruction, as identified by its full instruction address**, per entry." (Dkt. 103, August Non-Infringement Report ¶ 99 (citing '752 patent, 11:8-14 & Figs. 5, 6, 8) (emphases added).)¹⁴ Dr. August further explained that Apple's products lack "a prediction associated with the particular data consuming instruction" because they use hashing, which he specifically contrasted with the '752 patent specification's disclosure of using full physical addresses when he provided his opinion of no infringement under the doctrine of equivalents. (*See id.* ¶¶ 262-278.)¹⁵ And Apple certainly responded by explaining that the specification discloses using full physical addresses, with no mention of hashing or aliasing, when WARF offered its interpretation during trial. (*See Dkt. 552*

¹⁴ *See also* Dkt. 103, August Non-Infringement Report ¶ 92 ("Each entry of the prediction table includes the physical address of a store instruction, the physical address of a load instruction, and a prediction."); *id.* ¶ 92 ("Thus, the physical address of any particular instruction may appear in at most one entry of the prediction table."); *id.* ¶ 93 ("The prediction table includes a prediction associated with a particular load instruction, namely the prediction value in the entry that identifies, by its physical address, the particular load instruction."); *id.* ¶ 94 ("In this example [Figure 5], '1' is the prediction value associated with a particular load instruction (LD 8) and a particular store instruction (ST 10)."); *id.* ¶¶ 95-96.

¹⁵ *See, e.g.*, Dkt. 103, August Non-Infringement Report ¶ 274 ("The '752 patent describes associating a prediction with **a particular load instruction** by creating a prediction table having **exactly one load instruction** per entry, meaning that each load instruction in the table is **identified by its full instruction address**." (emphases added)); *id.* ¶ 275 ("The LSD Predictor thus takes a completely different approach to identifying instructions (by 12-bit hashed tags rather than **full instruction addresses**) and associates predictions with instructions in a substantially different way than the '752 patent (with groups of instructions rather than **individual** instructions)" (emphases added)).

at 7-8.) Thus, WARF’s suggestion that Apple should have responded earlier to an argument that WARF had not yet made is untrue and an apparent attempt to distract from the real issue: that the ’752 patent, including the plain claim language and the specification, requires a predictor that associates a prediction with a single load instruction.¹⁶

iii. Does not amount to disclaimer of claim scope

WARF next argues that the Court’s claim construction amounts to a disclaimer of claim scope—and a disclaimer that, according to WARF, is not supported by the specification. (Dkt. 711 at 75-76.) However, the Court’s construction of “the particular data consuming instruction” as meaning a “single” load instruction does not disclaim any claim scope. Instead, as discussed above, it affords the asserted claims their full breadth according to the plain and ordinary meaning of the word “particular.” *See supra* pp. 32-35. It is also supported by the specification’s disclosure of the invention and the preferred embodiments. *See supra* pp. 35-39. As such, the Court did not need to find any disclaimer in order to construe the “particular”

¹⁶ The testimony of Dr. August that WARF cites is referring not to the specification of the ’752 patent, but rather to a hypothetical modified version of the ’752 patent where the prediction table “now contains a subset of the full physical address instead of the full physical address.” (Dkt. 238 (August Dep.) at 265:18-266:6.) As Dr. August explained, that hypothetical modified version of the ’752 patent bears no resemblance to the processor described in the ’752 patent because it “is not particular to a particular load.” (*Id.*)

Additionally, the testimony of Dr. Colwell that WARF cites does not state that “the ’752 patent discloses only partial addresses.” (Dkt. 711 at 74.) In fact, Dr. Colwell’s testimony says the opposite of what WARF contends. (Dkt. 239 (Colwell Dep.) at 46:2-10 (“Q. Sure. And is there anything in the specification that says you must put in all of the physical address bits of the load and store instruction into the prediction table? Do they ever say that? A. I think they imply it with the word ‘particular’ in Claim 1.” (objection omitted)); *id.* at 47:2-13 (“Q. Sitting here today, can you identify -- without rereading the entire patent, can you identify for me any location where the inventors say in the specification, [y]ou must include the complete physical address of the load and store instructions in the prediction table? A. I will. But my immediate answer is Claim 1 is all I need. If they say ‘particular,’ that’s the only way to get that.” (objection omitted); *id.* at 51:2-8 (“Q. No unique identifiers for loads and stores shown in the prediction table of the working embodiments of the ’752 patent, correct? A. You don’t need them **because you’re storing the entire address.**” (emphasis added; objection omitted).))

limitation as it did. *See, e.g., Phillips*, 415 F.3d at 1312-13 (explaining that claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in light of the specification); *see also IGT v. Bally Gaming Int’l, Inc.*, 659 F.3d 1109, 1119 (Fed. Cir. 2011) (finding no disclaimer and construing a term consistent with its plain and ordinary meaning).

iv. Gives meaning to the claim term “particular”

Finally, the Court’s construction of the phrase “the particular data consuming instruction” as referring to a “single” load instruction properly gives meaning to the claim term “particular.” WARF’s interpretation, on the other hand, would strip the word “particular” of *any* meaning in the claim language.

Indeed, WARF argues that “the phrase ‘*the said*’ is akin to the phrase ‘*the particular*’ in the ’752 patent claims” and that a person of ordinary skill in the art would have interpreted “the particular” merely to make the claim element “refer[] to its earlier recitation.” (Dkt. 711 at 67 (emphasis in original); *see id.* at 66-68, 76.) Likewise, Dr. Conte testified at trial that the language “to produce a prediction associated with the particular data consuming instruction” is merely “referring back to the load … that produced the misspeculation.” (Dkt. 665, 10/06/2015 Trial Tr. 148:15-18 (Conte); *see also* Dkt. 650-2 at 93 (Conte Demonstrative 111).) Dr. Conte also testified that “particular … is identifying in this case an association,” and is not equivalent to “uniqueness or one and only [one].” (Dkt. 665, 10/06/2015 Trial Tr. 158:5-10 (Conte); *see also id.* at 169:14-18 (“[I]n my opinion the claim doesn’t require one and only, the claim and the patent contemplate there being more than one load that can map into a particular entry.”).) But both purposes that WARF and Dr. Conte attribute to the term “particular” are already present in *other* claim language: (1) “the … data consuming instruction” already refers back to its antecedent basis, which is “a data consuming instruction” in the preamble (*see supra* pp. 32-33);

and (2) “associated with” already indicates that there is an association between a prediction and a load instruction.

Under WARF’s and Dr. Conte’s reading of the claim language, the term “particular” would be rendered meaningless. In fact, Dr. Conte admitted at his deposition that the word “particular” does not add anything to the claims. (Dkt. 253 (Conte Dep.) at 135:11-14 (“As I said before, I believe whether ‘particular’ is there or not, it’s referring to a data consuming instruction as called out in the preamble”); *id.* at 135:23-24 (“[I]n the scope of claim 9 -- that ‘particular’ doesn’t add anything.”).) That is not an appropriate interpretation, especially where (as discussed above) the plain meaning of the word “particular” makes sense in the context of the claim language and the specification. *See, e.g., Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.”); *Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc.*, 214 F.3d 1302, 1305-07 (Fed. Cir. 2000) (refusing to adopt a claim construction which would render claim language superfluous); *see also Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 781 (Fed. Cir. 2010) (cautioning that the “notice function [of the patent system] would be undermined ... if courts construed claims so as to render physical structures and characteristics specifically described in those claims superfluous”).

Remarkably, WARF asks the Court to conclude that “the inclusion of a single innocuous word such as ‘particular’ buried within a claim” (Dkt. 711 at 76) should not limit the scope of the claims in any way. But WARF and the named inventors chose to describe their invention as requiring “a prediction associated with the particular data consuming instruction” (notably, the **only** limitation from claim 1 that is missing from the Hesson prior art), and it is a limitation on the scope of the asserted claims. The public—including Apple—is entitled to rely on WARF’s

own description of what it invented, and WARF must be held to the limited invention that it described and claimed in the '752 patent. *See, e.g., Phillips*, 415 F.3d at 1319 (emphasizing the importance of interpreting claim language in accordance with the claim language, specification, and file history to avoid “undermining the public notice function of patents”); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (“The claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee’s claim, a record on which the public is entitled to rely. In other words, competitors are entitled to review the public record, apply the established rules of claim construction, ascertain the scope of the patentee’s claimed invention and, thus, design around the claimed invention.”).

2. A new trial is warranted because the jury should have been permitted to decide whether Apple’s products literally satisfy the “prediction threshold detector” limitation.

Apple also requests a new trial on the ground that Apple’s non-infringement defense with respect to the “prediction threshold detector” limitation should have been decided by the jury instead of being decided on JMOL during trial. Contrary to WARF’s arguments, Apple’s non-infringement defense was not contrary to law and presented a factual dispute that properly should have been resolved by the jury. Accordingly, Apple respectfully requests that the Court grant a new trial to allow a jury to determine whether Apple’s accused products literally infringe the '752 patent with all of Apple’s defenses considered.

a. The factual question of whether Apple’s products literally satisfy the “prediction threshold detector” limitation was disputed at trial.

WARF first contends that the relevant facts underlying Apple’s non-infringement defense for the “prediction threshold detector” claim limitation were “undisputed” at trial. (Dkt. 711 at 78-82.) It is true that certain facts, including certain key facts *supporting* Apple’s non-infringement defense, were not disputed at trial. For example, WARF and Dr. Conte agreed that

Apple's LSD Predictor decides whether to prevent speculation not based on the counter value alone but based on four factors including the Armed Bit. (*See* Dkt. 711 at 78-79 (WARF's brief identifying and discussing four factors including the Armed Bit); Dkt. 665, 10/06/2015 Trial Tr. 273:19-275:17 (Conte).) But several of WARF's characterizations of the supposedly undisputed facts, as well as the factual question of whether Apple's accused products literally satisfied the "prediction threshold detector" claim element, were certainly disputed by Apple and its witnesses at trial.

For example, WARF describes the RTL code for Apple's products as establishing that "***when*** the Load Tag for a dispatched Load is in an LSD Predictor table entry ... and ***when*** the Armed Bit for that table entry is set to 1 ... , ***then*** the following will occur: If the Counter associated with the load is within the predetermined range of 1-7, then the load will be blocked from speculating." (Dkt. 711 at 79-80 (emphasized added).) But the code that WARF points to does not first check the Armed Bit and then subsequently check the value for the counter. Instead, as Dr. August explained and the RTL code itself shows (by the use of "&"), Apple's products check all four conditions identified at line 4596 at the same time—and all four conditions must be satisfied in order for speculation to be prevented. (PX142.0075, ln. 4596 (RTL Code, "cyc_mdrlsparr.v"); Dkt. 667, 10/08/2015 Trial Tr. 183:2-184:20 (August) ("This is again an equation. Here it's the ampersand. So we're looking at four conditions all have to be true, one and two and so on."); *see also id.* at 48:7-57:15 (Williams).)

WARF also claims it was undisputed that the range of counter values in Apple's LSD Predictor is "***permanently fixed***" at 1-7. (Dkt. 711 at 81 (emphasis in original).) Dr. August and Apple's engineers testified, however, that the Armed Bit changes dynamically instead of using a range that is "permanently fixed" or "predetermined." (Dkt. 667, 10/08/2015 Trial Tr. 181:11-13

(August) (“Q. Now, is the armed bit set in advance or does it change dynamically? A. It changes dynamically.”); *id.* at 49:8-50:20 (Williams).) They explained, for example, that speculation may be ***allowed*** when the counter value is 3 (i.e., within WARF’s alleged “predetermined range” for ***preventing*** speculation) because the decision whether to speculate or not in Apple’s products depends on a different set of conditions. (Dkt. 667, 10/08/2015 Trial Tr. 48:7-57:15 (Williams); *id.* at 185:11-21 (August).) Those facts demonstrated that Apple’s products do not literally satisfy the “prediction threshold detector” limitation, or at least presented a factual dispute that should have been decided by the jury.¹⁷

Moreover, WARF applies the wrong legal standard. Even if WARF could point to ***some*** evidence to support its infringement theory, that is not enough to justify the grant of JMOL. JMOL requires that ***no reasonable jury*** could have accepted Apple’s non-infringement defense. *See, e.g., Sheehan v. Donlen Corp.*, 173 F.3d 1039, 1043 (7th Cir.1999) (“To warrant judgment as a matter of law … there must have been no legally sufficient evidentiary basis for a reasonable jury to find for the non-moving party.”); *Old Town Canoe Co. v. Confluence Holdings Corp.*, 448 F.3d 1309, 1314 (Fed. Cir. 2006) (“A motion for JMOL is properly granted only if no reasonable juror could find in the non-movant’s favor.”). Because there was substantial evidence that could have supported a non-infringement finding for the “prediction threshold detector” limitation (*see* Dkt. 678 at 30-32), JMOL was inappropriate and the jury should have been permitted to decide the issue.

¹⁷ Additionally, WARF claims it was undisputed that a Load Tag in a table entry “mean[s] there is a prediction associated with the Load” and that an Armed Bit set to 1 “mean[s] that the Store associated with that Load has not yet executed.” (Dkt. 711 at 78-79.) As discussed in Sections I.A.2 & I.A.3 above, however, Apple and Dr. August explained that a Load Tag or table entry is not associated with “the” load instruction and an Armed Bit set to 1 does not indicate that a store instruction “has not yet executed.”

Finally, to the extent the Court agrees with WARF that there was no factual dispute as to the operation of Apple’s LSD Predictor, the only conclusion to be drawn from the evidence was that Apple’s products do not infringe. As explained below, WARF’s arguments for infringement all require rewriting the claim language for the “prediction threshold detector” limitation or misapplying legal principles regarding when a device “sometimes infringes,” is “capable of” infringing, or includes only “additional, unrecited” elements. Under the Court’s claim constructions and the plain and ordinary meaning of the remaining claim language, no reasonable jury could have found that Apple’s LSD Predictor includes the specific “prediction threshold detector” recited in the asserted claims.

b. Apple’s accused products do not “sometimes infringe.”

WARF argues that Apple’s non-infringement defense for the “prediction threshold detector” limitation was contrary to law because, according to WARF, it violated the principle that a device which sometimes infringes, still infringes. (Dkt. 711 at 82.) As explained in Apple’s opening brief, however, Apple’s products do not “sometimes” infringe; they *never* include the specific “prediction threshold detector” required by the asserted claims because Apple’s LSD Predictor decides whether to prevent speculation based on different criteria from what the claim specifies. (*See* Dkt. 678 at 31-32.)

WARF continues to treat the asserted claims as method claims rather than device claims, by focusing on the claim language saying “preventing data speculation when a prediction is within a predetermined range” and by alleging that a device infringes as long as there may sometimes be instances in which speculation is prevented and a prediction is within a predetermined range. (Dkt. 711 at 83.) But the fact that those two events could happen at the same time does not mean that the device sometimes infringes. Instead, the claim requires a specific circuit—a “prediction threshold detector” that prevents speculation when the prediction

is within a predetermined range. The evidence demonstrated that Apple's products do not contain that structure. Apple's LSD Predictor may or may not prevent speculation when a prediction is within the range identified by WARF because the accused circuit looks at a combination of different factors, including the Armed Bit, when determining whether to prevent speculation and therefore is not the claimed "prediction threshold detector." (Dkt. 667, 10/08/2015 Trial Tr. 186:10-16, 187:1-23 (August).)

In what appears to be a response to Apple's argument that WARF was improperly treating the asserted claims as method claims rather than apparatus claims, WARF now also asserts that Apple's accused devices satisfy the "prediction threshold detector" limitation because they allegedly are "capable of" operating in a "mode" that infringes. (Dkt. 711 at 83-84.) But as explained above (p. 23), the accused products sold by Apple are only capable of operating in a single "mode," where the HID1 bits are set so as to enable the LSD Predictor to operate normally. In that mode, Apple's LSD Predictor always uses a combination of four factors to determine whether to prevent speculation and never includes the claimed "prediction threshold detector" that prevents speculation simply by looking at whether a prediction is within a predetermined range. (*See* Dkt. 678 at 29-32.)

In an effort to justify its infringement theory with respect to the "prediction threshold detector" limitation, WARF literally rewrites the claim language. WARF changes the claim requirement of "a prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range" to "a prediction threshold detector ... *capable of sometimes* preventing data speculation for instructions having a prediction within a predetermined range." (Dkt. 711 at 85 (emphasis added) (internal quotation marks omitted).) WARF's revision of the claim language fundamentally changes the claim scope, because it

changes the requirements for the “prediction threshold detector” and how that structure determines whether to prevent speculation, and it allows for infringement even when the accused device lacks the structure of the “prediction threshold detector” recited by the claim. WARF’s rewriting of the claim language also eliminates the claim requirement that the range must be “predetermined,” because it apparently allows the same prediction value (e.g., 3) sometimes to be within the range and sometimes to be outside the range—rather than knowing ahead of time whether it is within a “predetermined range.”

The testimony of Apple’s engineers and expert cited by WARF does not support the grant of JMOL to WARF. On the contrary, their testimony demonstrates that Apple’s LSD Predictor does not simply prevent speculation when a prediction is within the range identified by WARF. For example, WARF points to Mr. Meier’s testimony and contends that he “admitted that there are scenarios in which a Load is blocked from speculating based on the range and threshold.” (Dkt. 711 at 84-85.) But WARF cites only an excerpt, which refers to one of the necessary conditions, and ignores Mr. Meier’s surrounding testimony where he made clear that the decision whether to prevent speculation is “based on a combination of events … [including] the armed bit, the confidence counter, and a match.” (Dkt. 665, 10/06/2015 Trial Tr. 50:19-25 (Meier Dep.); *see also id.* at 51:6-20.) Similarly, Dr. August explained, as an example, that speculation could be either allowed or prevented when there is a counter value of 3 because the decision whether to prevent speculation depends on a combination of factors including the Armed Bit. (Dkt. 667, 10/08/2015 Trial Tr. 185:16-21.) This testimony, consistent with the RTL code, all supported Apple’s defense that its products lack the specific “prediction threshold detector” required by the asserted claims.

c. Apple’s non-infringement defense did not rely on the presence of additional, unrecited elements.

WARF also contends that Apple’s non-infringement defense was contrary to law because “infringement of an open-ended patent claim cannot be avoided merely by practicing additional, unrecited elements.” (Dkt. 711 at 87.) More specifically, WARF asserts that the Armed Bit used by the LSD Predictor in Apple’s products was merely an “additional element” that could not be relied upon to avoid infringement of claim 1. (*Id.*; *see also id.* at 88.) WARF’s argument misapplies the law to both the claim language and the facts at issue here.

As discussed above, claim 1 recites a “data speculation decision circuit” “comprising” two elements: (a) a “predictor,” and (b) a “prediction threshold detector.” Apple does not contend that the presence of any additional elements beyond (a) and (b), such as a third element (c), means that there can be no infringement. But, as this Court previously ruled, “WARF ... cannot rely on ‘comprising’ to expand what is claimed in subpart (a).” (Dkt. 559 at 4.) The same rule applies to the second element, meaning that WARF cannot rely on “comprising” to expand what is claimed in subpart (b). The claim still requires the element recited in subpart (b), with all the limitations that WARF placed upon it when drafting the claim: “a prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range.” (PX1.0017, at claim 1 (’752 Patent).)

Although WARF contends generally that the Armed Bit is an “additional, unrecited element” (Dkt. 711 at 87-88), it does not assert or even suggest that the Armed Bit is a third element (c) in addition to recited elements (a) and (b). Instead, WARF’s argument is that the Armed Bit imposes an “**additional condition**” to preventing data speculation beyond “having a prediction within the predetermined range.” (Dkt. 711 at 88 (emphasis in original); *see also id.* (WARF arguing that “Apple’s processors ... cannot avoid infringement of claim 1 by employing

additional, unrecited conditions (e.g., Armed Bit set to 1) in conjunction with the ‘predetermined range’ condition (i.e., Counter within the range of 1-7.”).) But that has nothing to do with how the word “comprising” is used in the asserted claims, where it allows only for additional elements beyond the claimed (a) “predictor” and (b) “prediction threshold detector.” The word “comprising” does not expand or change the conditions that may be used by the “prediction threshold detector” in determining whether to prevent data speculation, as WARF incorrectly suggests. In effect, WARF is treating the asserted claims as though the word “comprising” appears ***within*** element (b) in a way that supposedly makes the conditions for preventing data speculation open-ended—which is clearly not how the claims are written.

WARF also contends that dependent claim 5 supports its argument that claim 1 allows for additional conditions because claim 5 requires the use of additional conditions, including a “flag value,” for deciding when to prevent speculation. (Dkt. 711 at 89-91.) But the portion of claim 5 that WARF points to refers to the conditions under which the “instruction synchronization circuit” ***delays*** a load instruction, not the condition under which the “prediction threshold detector” ***prevents speculation*** as recited in claim 1. (*Compare* PX1.0017, at claim 1 ('752 Patent), *with* PX1.0018, at claim 5 ('752 Patent).) WARF nonetheless insists that claims 2 and 5 contain “mutually exclusive requirements under Apple’s theory” by arguing that claim 5 depends from claim 2, which states that the “prediction threshold detector includes an instruction synchronization circuit.” (Dkt. 711 at 90.)¹⁸ Even if true, there is no inconsistency because the two limitations that WARF is comparing in the two claims describe the conditions for

¹⁸ In making this argument, WARF asserts that claim 5 depends from claim 2. (Dkt. 711 at 90.) At trial, however, WARF’s expert treated claim 5 as dependent from claim 3. (See Dkt. 665, 10/06/2015 Trial Tr. 186:12-14 (Conte) (“So claim 5 is actually a claim that calls out more items than claim 3. So if you prove claim 5 is there, then claim 3 is there.”); Dkt. 668, 10/09/2015 Trial Tr. 151:4-5 (Conte) (“It’s doing what claim 5 says. It’s adding a tomato to claim 3.”).)

performing *different* functions (“preventing data speculation” vs. “delay[ing] the particular data consuming instruction”). In any event, dependent claim 5 does not (and cannot) change claim 1’s requirement of “a prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range”—a structure that Apple’s devices do not have.

Nor does Apple’s non-infringement theory exclude the preferred embodiment, as WARF contends (Dkt. 711 at 90-91). As an initial matter, it is unclear how Apple’s non-infringement defense could exclude a preferred embodiment from the specification, since infringement requires comparing the accused products to the asserted claims, not to the preferred embodiment. (*See* Dkt. 646 at 7 (Closing Liability Instructions) (“You must compare the accused products with each and every one of the requirements of a claim to determine whether all of the requirements of that claim are met. You may not compare the accused products with any example in the specification of the ’752 patent.”).) In any case, WARF’s argument fails for the same reason as stated above. As with claims 1 and 5, the portion of the specification cited by WARF describes a different set of conditions used by the “instruction synchronization circuit” for *delaying* the particular load instruction. (PX1.0012, at 4:54-65 (’752 Patent).) Apple’s non-infringement defense, however, was that its products do not have a “prediction threshold detector” for *preventing speculation* as specified by claim 1 (i.e., “for instructions having a prediction within a predetermined range”).

d. Apple was prejudiced by the Court’s JMOL order.

Lastly, WARF argues that Apple was not prejudiced by the Court’s grant of JMOL during trial. (Dkt. 711 at 91.) But JMOL should not have been granted to WARF, because the jury reasonably could have accepted Apple’s non-infringement defense based upon the “prediction threshold detector” limitation for the reasons discussed above. The prejudice caused by entering a directed verdict on the fifth day of trial further demonstrates that the only

appropriate remedy (other than granting JMOL in Apple's favor) would be a new trial on all issues where Apple is able to present all of its defenses.

Contrary to WARF's suggestion (Dkt. 711 at 93-95), Apple was not required to object to WARF's prejudicial statement in closing argument that one of Apple's non-infringement defenses presented by Dr. August was no longer in the case. Apple is not arguing that the statement should have been excluded; it is pointing out that the grant of JMOL on the fifth day of trial did, in fact, shape the trial and caused prejudice to Apple by undermining the credibility of both Apple and its expert. WARF cannot deny this, as its counsel made that very observation to the jury during his closing argument, thereby confirming Apple's point. (*See* Dkt. 669, 10/12/2015 Trial Tr. 11:2-14 (WARF's counsel pointing out during his closing statement that "there was a lot of testimony, particularly from Dr. August," saying that Apple's products did not satisfy the "predetermined range" limitation but that the issue was no longer in the case).)

3. A new trial is warranted because the jury's infringement verdict is against the manifest weight of the evidence.

In its opening brief, Apple also requested a new trial on the basis that the jury's infringement verdict was against the manifest weight of the evidence. (Dkt. 678 at 34.) WARF's only response to this argument is its contention that it "presented substantial evidence at trial that more than adequately supports the jury's infringement finding." (Dkt. 711 at 95.) However, for the reasons stated in Apple's opening brief and in Sections I.A and I.B above, the jury's infringement verdict is against the great weight of the evidence. For this additional reason, a new trial is warranted.

If a new trial is granted on infringement, it should also include a new trial on invalidity (and damages). WARF does not dispute that the Court may grant a new trial on all issues; it contends only that the Court should not do so because the issues of infringement and invalidity

or damages are supposedly “distinct and separate.” (Dkt. 711 at 96.) The Federal Circuit has held, however, not only that a court *may* grant a new trial on related issues but that it *must* do so “unless it clearly appears that the issue to be retried is so distinct and separable from the others that a new trial of it alone may be had without injustice.” *Witco Chem. Corp.*, 787 F.2d at 1549 (quoting *Gasoline Prods.*, 283 U.S. at 500); *see also id.* (“[I]t is inappropriate, in light of the evidence presented and arguments made at this trial, to have one jury return a verdict on the validity, enforceability and contract questions while leaving the infringement questions to a second jury.”).

Here, the issues of infringement and invalidity are not “distinct and separable,” especially given how the parties tried the issues in this case. For example, Apple specifically highlighted the tension between WARF’s arguments on infringement and invalidity to argue that the ’752 patent cannot be both valid and infringed:

One of the questions for you to ask yourselves when you retire to the jury room is this: If the difference between just a load and a store according to Dr. Mudge is enough to make the WARF patent very different and very different from Hesson, ... how can it be that the Apple products that have more differences infringe? How can it be they have every limitation exactly? On the other hand, if you think that the differences between the Apple products and the WARF patent are not significant, then how can it be that the differences between Hesson and Steely and the WARF patent are not insignificant as well? WARF can’t have it both ways. You can’t make -- you can’t look for small differences in one venue and not the other. They are either differences or they are not.

(Dkt. 669, 10/12/2015 Trial Tr. 72:10-25 (Apple Liability Closing).) WARF similarly argued to the jury that Apple’s positions on non-infringement and invalidity were supposedly inconsistent.

(Dkt. 667, 10/08/2015 Trial Tr. 202:7-204:19 (WARF suggesting that Dr. August’s testimony on non-infringement was inconsistent with Dr. Colwell’s testimony on invalidity); Dkt. 669, 10/12/2015 Trial Tr. 15:20-16:20 (WARF Liability Closing) (referring to supposedly inconsistent testimony offered by Apple on the issues of invalidity and non-infringement).)

WARF has reiterated those arguments post-trial, including in its opposition to this motion. (Dkt. 711 at 22-23 (arguing that Dr. Colwell’s testimony on invalidity was inconsistent with Dr. August’s testimony on non-infringement); *id.* at 142 (arguing that Apple’s non-infringement arguments for vicarious liability are inconsistent with Apple’s anticipation defense based upon Chen); *see also* Dkt. 683 at 50-51 (“Apple Presented Mutually Inconsistent Non-Infringement and Invalidity Theories at Trial”)).) Having attempted to leverage the issues of infringement and validity against each other, WARF cannot now contend that they are “separate” issues that need not be tried together.¹⁹

Indeed, there is a fundamental tension between WARF’s positions on infringement and validity. With respect to validity, WARF argued that Hesson is “very different” from the ’752 patent, despite that the fact that the only difference between Hesson and the ’752 patent is that Hesson tracks predictions by store instructions and the ’752 patent tracks predictions by load instructions (claim 1) or load/store pairs (claim 9). (Dkt. 667, 10/08/2015 Trial Tr. 303:3-22 (Mudge); Dkt. 668, 10/09/2015 Trial Tr. 36:9-10, 72:9-74:6 (Mudge); *see also* Dkt. 664, 10/05/2015 Trial Tr. 180:13-14 (WARF Liability Opening) (arguing that the ’752 patent is “really completely different” from Hesson).) Yet for purposes of infringement, WARF argued that the even greater differences between Apple’s accused products and the ’752 patent were not

¹⁹ WARF has mixed the issues of infringement and validity at other times as well. For example, WARF attempted to bolster its infringement claim by arguing that Apple “needed” the invention of the ’752 patent because Apple’s accused chips contain billions of transistors. (*E.g.*, Dkt. 669, 10/12/2015 Trial Tr. 76:9-77:1 (WARF Liability Closing).) At the same time, in response to Apple’s obviousness arguments, WARF relied on the smaller number of transistors in 2000 and 2001 to attempt to explain away the fact that no one licensed the ’752 patent. (*E.g.*, Dkt. 669, 10/12/2015 Trial Tr. 75:7-15 (WARF Liability Closing) (“So there was a lack of licensing interest among these companies in early 2000/2001.... The chips that they made weren’t that complex yet, so they didn’t have a need for it.... So the lack of licensing interest is not surprising.”).) Because WARF sought to make the issue of transistor counts relevant to both infringement and invalidity, any new trial should address both issues together.

meaningful. (*E.g.*, Dkt. 665, 10/06/2015 Trial Tr. 164:4-169:18 (Conte) (testifying that Apple’s use of a hashed Load Tag satisfies the claim requirement of associating a prediction with a “particular” load instruction because the incidence of aliasing is supposedly low); Dkt. 668, 10/09/2015 Trial Tr. 134:6-19 (Conte) (opining that the Apple’s products satisfy the claim requirement of “detecting a mis-speculation” despite the absence of an explicit check to determine whether a mis-speculation has occurred).) A new trial on one issue therefore requires a new trial on the other.

A new trial on infringement would also require a new trial on damages. Vacating the jury’s verdict on infringement would necessarily eliminate the damages verdict, since there can be no damages without liability and the trial evidence was presented cumulatively between the liability phase and the damages phase. Nor can the issues of infringement and damages be considered “distinct” here. (*See* Dkt. 711 at 96-97.) Indeed, during the damages phase of trial, WARF’s counsel and damages experts repeatedly referred to the operation of Apple’s “infringing” LSD Predictor and the jury’s finding of infringement during the liability trial. (*E.g.*, Dkt. 673, 10/16/2015 Trial Tr. 106:24-25 (WARF Damages Closing) (“[Y]ou have found [that ’752 technology] has been infringed by Apple.”); *id.* at 126:25-127:1 (“You already found that the Apple A7, A8, A8X infringe.”); *id.* at 128:19-22 (“[I]f you found there was infringement of the A7 chip generally and the A7 chip that’s made by Samsung in Texas is exactly the same, it too infringes.”); Dkt. 671, 10/14/2015 AM Trial Tr. 135:19-21 (Lawton) (“I’ve used the unit data that reflects Apple’s actual sales of the products that have been found to infringe.”).) A new trial on infringement therefore requires a new trial on damages as well.

II. APPLE IS ENTITLED TO JUDGMENT AS A MATTER OF LAW OR A NEW TRIAL ON INVALIDITY.

A. A Reasonable Jury Could Only Have Found That The Asserted Claims Were Obvious Over Hesson In View Of Steely.

1. Independent claims 1 and 9

Hesson undisputedly discloses all limitations of the independent claims of the '752 patent with one exception: Hesson associates its predictions with a store instruction, whereas the '752 patent associates its predictions with a load instruction (claim 1) or a load/store pair (claim 9). (Dkt. 668, 10/09/2015 Trial Tr. 69:21-73:1 (Mudge) (“Q. And I just want to be sure that we capture the dispute. You and Dr. Colwell agree that everything but what’s highlighted there today is in Hesson expressly; correct? A. Yes. Q. The only thing that’s different is the difference between a load and store; correct? A. The absence of the load. Q. And the presence of a store in Hesson; correct? A. Hesson has the store.”).) Contrary to WARF’s argument (Dkt. 711 at 99-104), the jury therefore could not have made factual findings against Apple concerning the scope and content of the prior art. There is no dispute that Hesson is prior art to the '752 patent and that it discloses all but one limitation of the broadest claims in the '752 patent.

A reasonable jury could have only found that the claimed invention would have been obvious to try in light of that single difference between Hesson and the asserted claims. As Dr. Colwell explained, there were only three ways to keep track of the history of load-store mis-speculations: by load instruction, by store instruction, or by load/store pair. (Dkt. 666, 10/07/2015 Trial Tr. 64:3-16.) All three of those possibilities were known in the prior art, including Steely’s disclosure of tracking mis-speculations by load/store pair. (*Id.* at 64:17-19, 73:16-74:2 (Colwell).) The claims of the '752 patent are simply an obvious variation of Hesson in view of Steely. (*Id.* at 143:22-145:1 (Colwell).)

WARF's opposition does not dispute that there are only three ways to keep track of the history of mis-speculation, or that Steely (like the '752 patent) discloses tracking the history of mis-speculation by load/store pair. Instead, WARF argues that there were "a large number of alternatives" for addressing "the general problem of ambiguous data dependences," which WARF contends defeats a finding of obviousness. (Dkt. 711 at 106-108.) But that argument ignores that the pertinent inquiry is the "differences between the prior art and the claims at issue." *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *see also* 35 U.S.C. § 103(a) (precluding patent protection "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made").²⁰ WARF may not expand the differences between the prior art and the claimed invention by contending that a person of ordinary skill in the art would have chosen a different "starting point" than Hesson. (Dkt. 711 at 106-107.)

WARF points to the vast amount of work that preceded the '752 patent, including the "plethora of techniques" that Dr. Moshovos acknowledged in his thesis (DX1665.0071), as supposed evidence of the non-obviousness. (Dkt. 711 at 106-108.) But that evidence can only diminish the alleged inventive contribution by the named inventors of the '752 patent. Simply put, the more work that others had done before the '752 patent, the less that the inventors of the '752 patent could have actually contributed.

Nor was Apple required to show that a person of ordinary skill in the art "would have had reason to select the Hesson invention" as a starting point.²¹ (Dkt. 711 at 117.) WARF argues

²⁰ The America Invents Act amended 35 U.S.C. § 103, but the '752 patent predates those amendments and the prior version of § 103 applies here.

²¹ WARF relies upon cases applying the "lead compound" analysis for obviousness challenges to chemical inventions to argue that it was Apple's burden to show that a person of ordinary skill in the art would select Hesson as a "starting point." (Dkt. 711 at 116 (citing *Altana*

that “Apple cites no authority” for the proposition that Hesson is the appropriate starting point for the obviousness analysis. (*Id.* at 116.) But using Hesson as the starting point is required by *Graham* and the statutory mandate to measure obviousness based upon the *differences* between the claimed invention and the asserted prior art. *See, e.g., Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1364 (Fed. Cir. 2001) (“The relevant inquiry is what a hypothetical ordinarily skilled artisan would have gleaned *from the cited references* at the time that the patent application leading to the [patent-in-suit] was filed.” (emphasis added)). WARF may not avoid assessing obviousness in light of the actual differences between the prior art and the claimed invention by ignoring the most pertinent prior art.

For the same reasons, WARF incorrectly argues that an obviousness analysis starting from Hesson is hindsight driven. (Dkt. 711 at 116-117.) It is not hindsight to measure the ’752 patent’s actual contribution against the closest prior art. Nor is it hindsight to observe that there is undisputedly only one difference between Hesson and the broadest claims of the ’752 patent. On the contrary, that narrow difference between Hesson and the ’752 patent is the focus of the obviousness analysis required under *Graham* and the Patent Act. *Graham*, 383 U.S. at 17 (holding that the obviousness analysis depends upon the “differences between the prior art and the claims at issue”); 35 U.S.C. § 103(a) (requiring that obviousness depend upon “the differences between the subject matter sought to be patented and the prior art”). The jury therefore made no “implicit finding that a person of ordinary skill in the art would *not* select Hesson as her starting point.” (Dkt. 711 at 117.) Indeed, if WARF were correct, then the jury

Pharm. AG v. Teva Pharm. USA, Inc., 566 F.3d 999 (Fed. Cir. 2009), and *Procter & Gamble Co. v. Teva Pharm USA, Inc.*, 566 F.3d 989 (Fed. Cir. 2009)); *see also id.* at 117 n.23 (citing *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007)).) But the “lead compound” analysis is unique to the chemical field and has no application here. *See Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1291 (Fed. Cir. 2012) (explaining that the “lead compound” analysis applies to cases involving “a new chemical compound”).

did not determine obviousness under the correct legal standard because it ignored the actual difference between the '752 patent and the prior art. (Dkt. 646 (Closing Liability Instructions) at 12 ("The following factors must be evaluated to determine whether Apple has established that plaintiff's claimed invention is obvious: ... the difference or differences, if any, between each claim of the asserted patent and the prior art.").)

WARF also argues that a person of ordinary skill in the art would have had no motivation to modify Hesson because "the Hesson reference, on its face, claims to 'deliver[] performance *within one percent of theoretically possible* with apriori [sic] knowledge of load and store addresses.'" (Dkt. 711 at 112 (quoting DX770.0006).) But Hesson's performance claim would not discourage further research. If anything, it would encourage a person of ordinary skill to look for ways to build on top of the gains that Hesson's design already obtained—for example, by associating Hesson's predictions with load-store pairs as described in Steely. (Dkt. 668, 10/09/2015 Trial Tr. 218:17-219:24 (Colwell).)

Indeed, the motivation to modify Hesson is contained within Hesson's own disclosure. Hesson explains that its design delays *all* load instructions because it tracks mis-speculations by store instruction alone. (DX770.0007, at 4:9-14 (Hesson) ("If the store barrier cache 11 predicts a store load conflict, this information is used during the dispatch of the store instruction to mark a barrier bit within the rename unit 12 so that no loads in program order are permitted to execute ahead of the store that is predicted to be violated.").) A person of ordinary skill in the art, however, would recognize that better performance could be achieved by delaying only the particular instructions that had caused a problem in the past by tracking load/store pairs. (Dkt. 666, 10/07/2015 Trial Tr. 145:12-146:2 (Colwell) ("You might ask can I get any more if I were to be more specific by also putting the load address in there.")); Dkt. 668, 10/09/2015 Trial Tr.

219:9-24 (Colwell) (“But if you’re interested in what you might get beyond that, that’s when you would start questions about how can I be more specific about which loads to [delay] and which ones can go around the guys that are blocking. And that’s when you would think about using what Steely was talking about.”).)

Likewise, WARF incorrectly contends that there would be no reason to modify Hesson without the ’752 patent’s supposedly “key insight” that it is necessary to track only the few load/store pairs that recently caused the problem. (Dkt. 711 at 109-111.) Because there are only three ways to track the history of mis-speculation, it does not require any insight to arrive at the claimed invention. Indeed, all three techniques for tracking the history of mis-speculation—including tracking by load/store pairs—were known prior to the ’752 patent. (Dkt. 666, 10/07/2015 Trial Tr. 64:3-19 (Colwell).) Given the small, finite number of possible ways to track the history of mis-speculation, using load/store pairs (as described in Steely and as claimed in the ’752 patent) is simply the result of routine experimentation from Hesson’s invention. (*Id.* at 145:2-146:2 (Colwell); Dkt. 668, 10/09/2015 Trial Tr. 215:25-216:5 (“It’s a straightforward extension of what’s already there.”)).

Contrary to WARF’s suggestion (Dkt. 711 at 111-112, 123-125), the supposed complexity of performing simulations would not discourage a person of ordinary skill from attempting to modify Hesson. Simulation is routine design work. (Dkt. 664, 10/05/2015 Trial Tr. 271:21-272:4 (Sohi) (“So the way you study something that has not been built yet or you cannot build yet is you build -- you build a piece of software that’s called a *simulator*.’’).) Indeed, Dr. Mudge himself admitted he has “spent a lot of time” running simulations—precisely what WARF contends a person of ordinary skill in the art would not do. (Dkt. 668, 10/09/2015 Trial Tr. 18:23-19:6 (Mudge).) WARF therefore incorrectly dismisses Dr. Colwell’s testimony that a

person of ordinary skill in the art would simulate the combination of Hesson with Steely as “simply his opinion.” (Dkt. 711 at 124.) On the contrary, Dr. Colwell’s testimony was supported by what Dr. Sohi and Dr. Mudge said about the common practice of using simulations to guide processor design. WARF’s argument that a person of ordinary skill in the art would not perform simulations cannot be reconciled with the testimony from witnesses for both parties concerning the common practices in the field.

WARF also speculates that modifying Hesson in view of Steely would be too complex because multiple load instructions could depend from a single store instruction. (Dkt. 711 at 112-113.) But that argument is entirely unsupported. Indeed, Dr. Mudge admitted that he did not have any evidence to suggest that is how “real code and real products” operate. (Dkt. 668, 10/09/2015 Trial Tr. 66:16-25 (Mudge).) And Dr. Colwell explained WARF’s hypothetical possibility of multiple load instructions dependent from a single store “vastly overstate[s] the reality” of how programs work and “would be really weird.” (Dkt. 666, 10/07/2015 Trial Tr. 219:7-221:11 (Colwell).) No reasonable jury could accept WARF’s admittedly unsupported argument that is completely divorced from how real programs operate.

WARF points to the fact that there was no evidence in the record that the engineers at IBM or DEC actually combined the teachings of Hesson with Steely or made an actual processor implementing that design. (Dkt. 711 at 113-114.) But that argument ignores the legally relevant question, which is what would have been obvious to a hypothetical person of ordinary skill in the art at the time of the alleged invention. What the prior art inventors did themselves does not demonstrate what a person of ordinary skill in the art would have done. *See Amazon.com*, 239 F.3d at 1364 (rejecting conclusion of non-obviousness as “erroneous as a matter of law” because it was based on admissions concerning whether someone personally considered combining the

teachings of certain references, not on “what a hypothetical ordinarily skilled artisan” would have done).

WARF also argues at length that the supposed unpredictability of the field of processor design defeats any reasonable expectation of success or any argument that the claimed invention was obvious to try. (*See* Dkt. 711 at 102-105, 125-126.) But “[o]bviousness does not require absolute predictability of success.” *In re O’Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1998). And although WARF argues that “the **results** of experimentation” must be predictable in order to be “obvious to try” under *KSR* (Dkt. 711 at 102), the only relevant result for purposes of the ’752 patent is whether the modification of Hesson in light of Steely would have produced a functioning processor. Dr. Colwell confirmed that a person of ordinary skill in the art would expect to obtain a working processor by combining Hesson and Steely, and WARF did not dispute that testimony. (Dkt. 668, 10/09/2015 Trial Tr. 214:12-14 (Colwell).) Whether or not that combination would also result in a performance improvement is beside the point because the claims of the ’752 patent do not require any particular level of performance. (*See* PX1.0017-.0018, at claims 1, 2, 3, 5, 6, and 9 (’752 Patent).)

The evidence of secondary considerations confirms that the ’752 patent is merely an obvious extension of the prior art. *First*, WARF argues that “the ’752 patent inventors were proceeding in a different direction than those of ordinary skill in the art.” (Dkt. 711 at 126-127.) But WARF points to no teaching in the prior art discouraging tracking the history of mis-speculation by load/store pair and identifies no legally relevant divergence between the prior art and the claimed invention. *See Galderma Labs., LP v. Tolmar, Inc.*, 737 F.3d 731, 739 (Fed. Cir. 2013) (“A reference does not teach away if it does not criticize, discredit, or otherwise

discourage investigation into the invention claimed.” (internal quotation marks and alterations omitted)).

Second, the evidence of “skepticism” that WARF cites does not demonstrate the non-obviousness of the invention. Skepticism must be followed by acceptance of the claimed invention—otherwise, it is just criticism. *See Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1367 (Fed. Cir. 2012) (considering evidence of “initial skepticism” followed by widespread adoption and praise as a relevant secondary consideration of non-obviousness). But the record in this case does not demonstrate widespread acceptance of the ’752 patent’s invention. On the contrary, numerous companies refused to license the ’752 patent. (*See* Dkt. 664, 10/05/2015 Trial Tr. 253:25-259:19 (Gulbrandsen); Dkt. 666, 10/07/2015 Trial Tr. 178:23-181:22 (Colwell); DX1669; DX1671; DX1672; DX1674; DX1688.) And even today, WARF has no evidence that any of Apple’s competitors are using the ’752 patent. (Dkt. 664, 10/05/2015 Trial Tr. 260:19-21 (Gulbrandsen).)

WARF also argues that the awards Dr. Sohi and Dr. Moshovos have received over the course of their careers demonstrate the non-obviousness of the invention. But even Dr. Mudge admitted that those awards relate to “a career of work,” not just the invention reflected in a single patent. (Dkt. 667, 10/08/2015 Trial Tr. 326:7-9 (Mudge); *see also* Dkt. 666, 10/07/2015 Trial Tr. 204:22-205:6 (Colwell).) Those awards therefore do not demonstrate acceptance of the claimed invention of the ’752 patent. There is simply no nexus between awards granted for a broad body of work and the specific invention claimed in the ’752 patent. Accordingly, the only reasonable conclusion that a jury could reach is that the supposed evidence of “skepticism” is actually criticism of the ’752 patent invention demonstrating obviousness. (Dkt. 666, 10/07/2015 Trial Tr. 175:6-176:22 (Colwell).)

Third, WARF points to the Intel license as a secondary consideration of non-obviousness. (Dkt. 711 at 128-130.) But Intel only licensed the patent after it was sued by WARF and in settlement of litigation, which makes it far less probative of the value of the '752 patent's invention than a voluntary license. *Cf. LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 77 (Fed. Cir. 2012) (explaining that reliance on litigation settlements as proof of the value of the invention is "questionable" because settlements are "tainted by the coercive environment of patent litigation"). Indeed, the evidence regarding licensing as a whole confirms the obviousness of the '752 patent. Despite soliciting numerous companies, WARF has been unable to find anyone interested in licensing the '752 patent outside of litigation. (See Dkt. 664, 10/05/2015 Trial Tr. 253:25-259:19 (Gulbrandsen); Dkt. 666, 10/07/2015 Trial Tr. 178:23-181:22 (Colwell); DX1669; DX1671; DX1672; DX1674; DX1688.)

WARF contends that Apple's arguments concerning licensing go to the weight of the evidence, which must be viewed in the light most favorable to the verdict. (Dkt. 711 at 130.) But the only reasonable interpretation of the licensing evidence demonstrates the obviousness of the '752 patent. Indeed, WARF itself argued that "the world would have beat a path to [the] door" of anyone who "truly solve[d] the problem" addressed by the '752 patent. (Dkt. 664, 10/05/2015 Trial Tr. 186:18-19 (WARF Liability Opening).) The fact that the '752 patent has generated no interest from anyone in the industry who was not sued by WARF—even now seventeen years after the '752 patent issued—confirms that no reasonable jury could accept WARF's strained interpretation of the licensing evidence.

Finally, WARF does not dispute the lack of commercial success or criticisms of the claimed invention. Instead, WARF argues that evidence is irrelevant because, according to WARF, "secondary considerations either favor the patentee or are a neutral factor." (Dkt. 711 at

146.) But that is not the law.²² A lack of adequate evidence of secondary considerations may confirm the evidence of obviousness relevant to the other *Graham* factors. *See, e.g., Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1370 (Fed. Cir. 2011) (affirming obviousness where patentee failed to establish commercial success or copying); *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) (same). The same is true in this case, where WARF offered no relevant evidence of secondary considerations outweighing the strong evidence of obviousness under the other *Graham* factors.

In sum, the only reasonable conclusion that the jury could reach is that the independent claims of the '752 patent are obvious over Hesson in view of Steely, and the Court should grant Apple's motion for JMOL.

2. Dependent claims 2, 3, 5, and 6

A reasonable jury could only find that Hesson in combination with Steely renders obvious the asserted dependent claims of the '752 patent as well. WARF does not present any reason why claim 2 would not be rendered obvious over Hesson in view of Steely beyond its arguments for claim 1. And the only argument that WARF raises with respect to claim 3 is one that WARF did not disclose during discovery or advance at trial. Indeed, until now, WARF's arguments with respect to the validity of claim 3 were the same as for claim 1.²³ (*See* Dkt. 668, 10/09/2015 Trial Tr. 15:1-22:1 (Mudge); *see also* Dkt. 107 (Mudge Report) ¶ 415 ("Claims 2

²² Indeed, there are certain secondary considerations—such as “simultaneous invention”—that by their nature can only support a finding of obviousness. *See, e.g., Geo. M. Martin Co. v. Alliance Mach. Sys. Int'l LLC*, 618 F.3d 1294, 1305 (Fed. Cir. 2010) (“Independently made, simultaneous inventions, made within a comparatively short space of time, are persuasive evidence that the claimed apparatus was the product only of ordinary mechanical or engineering skill.” (internal quotation marks omitted)).

²³ WARF notes that Apple did not separately address claims 2 or 3 in its prior JMOL briefing. (Dkt. 711 at 118 n.24.) But Apple can hardly be faulted for failing to address arguments that WARF never made.

and 3 depend from Claim 1. Dr. Colwell's analysis of these claims follow essentially the same logic as for Claim 1. *See* Colwell Report at ¶¶ 265-274 (repeatedly stating 'As explained above with respect to claim 1'). Dr. Colwell's analysis of Claim 9 similarly relies on the same logic as Claim 1. *See* Colwell Report at ¶¶ 285-287. Thus, for the same reasons as stated in Section XI.D, Hesson (singly or in combination with Steely and/or Hoyt) does not invalidate Claims 2, 3, or 9 either.".)

In any case, WARF's newly-minted argument provides no support for the jury's verdict with respect to claim 3. WARF contends that "the particular data consuming instruction" would not be "in the prediction table," even if Hesson were modified in view of Steely, "there can be many load instructions for any given store instruction." (Dkt. 711 at 118-119.) But Dr. Mudge admitted that he did not have any evidence to suggest that is how "real code and real products" operate. (Dkt. 668, 10/09/2015 Trial Tr. 66:16-25 (Mudge).) And Dr. Colwell explained WARF's hypothetical situation bears no resemblance to how real programs work. (Dkt. 666, 10/07/2015 Trial Tr. 219:7-221:11 (Colwell).) Nor is there any basis for WARF's suggestion that Hesson modified in view of Steely would delay *all* load instructions. (Dkt. 711 at 119.) On the contrary, Dr. Colwell explained that the reason a person of ordinary skill in the art would modify Hesson in light of Steely is so that it would delay only the particular load/store pair that had mis-speculated, rather than all load instructions. (Dkt. 666, 10/07/2015 Trial Tr. 145:2-7 (Colwell) ("They might think there might be additional performance and be more specific about the loads that you're holding up based on a store.").) Accordingly, even if WARF had made the argument at trial (which it did not), no reasonable jury could accept WARF's position.

With respect to claims 5 and 6, WARF contends that a jury could reasonably credit Dr. Mudge's testimony that Hesson's rename unit and reservation station do not meet the

“synchronization table” limitations of claims 5 and 6. (Dkt. 711 at 120-122.) But Dr. Mudge did not dispute Dr. Colwell’s testimony that Hesson’s rename unit and reservation station together perform “the same function” as the claimed synchronization table. (Dkt. 666, 10/07/2015 Trial Tr. 154:22-155:1 (Colwell).) Dr. Mudge simply argued that Hesson’s rename unit and reservation station “are independent structures,” and he did not “see how you could put them together.” (Dkt. 668, 10/09/2015 Trial Tr. 21:14-20 (Mudge).) But WARF successfully argued for purposes of claim construction and infringement that the ’752 patent’s synchronization table requires no particular structure and could be satisfied by either a single table or multiple distinct structures. (*See, e.g.*, Dkt. 335 at 30 (“Tables are logical constructs that are used to reflect historical information about instructions. In other words, they are data structures, not specific circuits. No additional limitations or requirements are placed on the form of the table.”); Dkt. 235 (Moshovos Dep.) at 228:18-21 (“And I could easily implement this as one table. I could implement as two tables. If we call a table a storage element or whatever, a data structure, I could implement as ten tables.”); *see also* Dkt. 464 at 24-32 (adopting WARF’s position concerning the required structure for the synchronization table limitations).) And the jury was instructed to apply WARF’s requested construction for “synchronization table.” (Dkt. 646 (Final Liability Instructions) at 5.) Having taken the position that the synchronization table limitations of claims 5 and 6 do not require any particular structure for purposes of infringement—which the Court adopted—WARF cannot defend the validity of claims 5 and 6 on the basis that Apple supposedly failed to identify a single structure in Hesson meeting the synchronization table limitations.²⁴

²⁴ Apple disputes the Court’s claim construction of “table” and may challenge that construction on appeal, if necessary. But that dispute is unrelated to the issues presented in

WARF also argues that a jury could reasonably have found the “creat[ing] an entry in the synchronization table” limitation of claim 6 not satisfied by Hesson combined with Steely. (Dkt. 711 at 122-123.) But WARF did not raise that argument at trial, and WARF tellingly cites no testimony from Dr. Mudge addressing that limitation. Instead, WARF argues that Dr. Colwell’s testimony that “Hesson is saying that he’s going to create an entry in the table only when there’s what he called a store/load conflict” is somehow inconsistent with Hesson’s statement that a store barrier bit is marked if “the store barrier cache 11 predicts a store load conflict.” (Dkt. 711 at 122-123 (quoting Dkt. 666, 10/07/2015 Trial Tr. 158:6-18 (Colwell) and DX770.0007, at 4:9-15 (Hesson)).) But there is no inconsistency between Dr. Colwell’s testimony and Hesson’s description. On the contrary, Hesson predicts a store-load conflict only after one has occurred. (See DX770.0007, at 4:62-64 (Hesson) (explaining that Hesson’s store barrier cache includes entries for “the violated store instruction”).) No reasonable jury could reject Dr. Colwell’s explanation as inconsistent with Hesson where no inconsistency exists and where WARF never made the argument at trial.

Because WARF has identified no basis on which a jury could reasonably find the asserted dependent claims of the ’752 patent valid, the Court should grant JMOL of invalidity as to claims 2, 3, 5, and 6.

B. A Reasonable Jury Could Only Have Found That Claims 1, 2, 3, And 9 Were Anticipated Or Rendered Obvious By Chen.

1. Anticipation

Apple is also entitled to JMOL on its defense that claims 1, 2, 3, and 9 of the ’752 patent are anticipated by Chen. WARF does not dispute that Chen reorders load and store instructions

Apple’s motion for JMOL because WARF’s arguments fail under the interpretation of synchronization table that WARF advocated and that the Court adopted.

during a profiling phase using the same technique as the '752 patent of tracking the history of mis-speculation to predict whether instructions should be allowed to execute out-of-order. (Dkt. 711 at 135-136.) WARF simply contends that Chen's reordering technique is distinct from the '752 patent because it supposedly occurs "entirely in software." (*Id.* at 136.) That argument, however, is inconsistent with the testimony of witnesses for both parties at trial, who confirmed that Chen's functionality performed in software necessarily runs on underlying hardware circuitry. (Dkt. 665, 10/06/2015 Trial Tr. 35:7-8 (Sohi) ("[T]he software program must run on the circuitry."); Dkt. 666, 10/07/2015 Trial Tr. 170:8-21 (Colwell) ("Q. I want to be very clear on this point. Is Chen's compiler running on a processor? A. It has to. Q. Is a processor hardware? A. It has to be. Q. And so those are circuits that Chen is running; right? A. At the bottom level they are, yes. Q. And so with respect to this issue of whether Chen is running [on] hardware, what's your opinion? A. He has to be. Q. And if that's correct, if a processor is circuitry, does Chen anticipate the claim? A. Yes.").) Moreover, WARF's own witnesses and documents describe Chen as "a software-**hardware** hybrid approach." (DX1665.0071 (Moshovos Thesis); Dkt. 668, 10/09/2015 Trial Tr. 60:23-61:3, 62:2-15 (Mudge); *id.* at 109:14-20 (Mahlke).) No reasonable jury therefore could have accepted WARF's argument that Chen does not anticipate because it is supposedly entirely software-based.

WARF's other arguments are simply variations of that same theme. For example, WARF's contention (Dkt. 711 at 134-135) that Chen only involved "in-order" processors ignores the earlier profiling stage where load and store instructions undisputedly are reordered. (Dkt. 668, 10/09/2015 Trial Tr. 118:11-18 (Mahlke) ("Q. During the profiling stage, the compiler reordered load and store instructions, did it not? A. That's correct. It reordered the source code load and store instructions."); *see also* DX845.0010 ("This is achieved by the compiler removing

the dependences between ambiguous store/load pairs, *allowing a memory load and its dependent instructions to be moved above any number of memory stores.*” (emphasis added)); DX1264.0029 (“The use of memory-dependence profiling in the IMPACT compiler allowed *speculative movement of memory load operations above stores* in an efficient way.” (emphasis added)); DX1265.0074 (“To allow a selected *load to move above an ambiguous store*, the dependence arc between the two instructions is removed.” (emphasis added)); DX1312.0002 (“This information allows the compiler to optimize and/or *reorder* a pair of memory references in the presence of inconclusive memory-dependence analysis.” (emphasis added)).) The fact that Chen does not reorder the instructions *again* after the profiling stage is irrelevant.

Similarly, WARF argues that Chen did not involve “an execution order differing from their program order” because there is no reordering of instructions after the profiling stage. (Dkt. 711 at 137-138.) But that is not necessary in order to execute instructions out of program order.²⁵ On the contrary, as Dr. Colwell explained, executing instructions in program order ensures that the processor will obtain the correct result and not mis-speculate. (Dkt. 666, 10/07/2015 Trial Tr. 43:6-44:8 (Colwell) (“And the promise of the compiler to you as the programmer is if you do what I just said, you’ll get the right answer at the end.”); Dkt. 668, 10/09/2015 Trial Tr. 216:6-14 (Colwell) (“If you follow that order, then the compiler guarantees you’ll get the right answer.”).) A processor that mis-speculates by definition is not executing instructions in the program order, and Chen undisputedly mis-speculates, as WARF concedes in its opposition. (Dkt. 711 at 139 (“[E]xecuting the instructions in the order supplied by Chen’s

²⁵ WARF’s argument (Dkt. 711 at 137-138) that Dr. Mahlke presented “undisputed” testimony that Chen did not reorder instructions after the profiling phase is therefore irrelevant. The fact that Chen’s reordered instructions can lead to incorrect results confirms that Chen is not executing in program order, regardless of when the actual reordering of instructions occurs. (Dkt. 666, 10/07/2015 Trial Tr. 161:2-7 (Colwell); Dkt. 668, 10/09/2015 Trial Tr. 216:6-14 (Colwell).)

compiler may actually result in incorrect execution.”).) A reasonable jury therefore could have only found that Chen involved executing instructions out of program order. (*See* Dkt. 666, 10/07/2015 Trial Tr. 161:2-7 (Colwell) (“You can’t get a mis-speculation if you do them in order.”); *see also* Dkt. 665, 10/06/2015 Trial Tr. 97:14-101:24 (Conte) (“This idea of going out of order is called *speculation*.... Mis-speculation is when I got that wrong and what I have to do is I have to squash, which is to throw away work. It’s also called flushing.”).)

WARF next argues that mis-speculations caused by Chen’s reordering of instructions during the profiling stage do not indicate that the processor is executing instructions out-of-order because those errors are addressed by “correction code,” not flushing the pipeline and re-executing instructions in the correct order. (Dkt. 711 at 139-140.) WARF never presented that argument before—and with good reason: it is contrary to what the Chen references say. Indeed, Chen’s own description of its repair code is exactly what WARF says would need to occur if instructions were executed out-of-order (i.e., discarding the incorrect results and re-executing the code in the correct order). (*See, e.g.*, DX1312.0015 (“If the conflict bit is set, the processor branches to the repair code. ***The repair code re-executes the preload and the instructions which depend on it.*** A branch instruction at the end of the repair code brings the execution back to the instruction immediately after the check. Normal execution resumes from this point.” (emphasis added)); DX1265.0063 (“If the conflict bit is set, the processor branches to the correction code marked by *Label*. ***The correction code re-executes the preload and the instructions which depend on it.*** A branch instruction at the end of the correction code brings the execution back to the instruction immediately after the check. Normal execution resumes from this point.” (emphasis added)); DX1264.0015 (“If an address overlap occurs, a predetermined bit is set. This signals the need to invoke the repair code ***to re-execute the load***”

instruction and the instructions which depend on it.” (emphasis added)); DX845.0002 (“If the hardware determines an address conflict has occurred, the check instruction will branch to correction code, which *re-executes the load and any dependent instructions.*” (emphasis added)).)

WARF also argues that Apple did not identify specific circuits that perform the claimed functions. (Dkt. 711 at 140-141.) But the '752 patent does not require specific circuitry that performs the claimed functionality. On the contrary, the claimed "data speculation circuit" and "data speculation decision circuit" can be any circuitry in the processor. When Chen's software approach runs on a processor, the processor necessarily provides the circuitry required by the claims. (Dkt. 665, 10/06/2015 Trial Tr. 35:7-8 (Sohi) ("[T]he software program must run on the circuitry."); Dkt. 666, 10/07/2015 Trial Tr. 170:8-21 (Colwell).)

WARF incorrectly suggests that Apple’s invalidity theory under Chen is inconsistent with Apple’s non-infringement defense to WARF’s claim of vicarious liability arising from Samsung’s initial chip fabrication in Austin, Texas. (Dkt. 711 at 142.) Unlike the Chen references which describe a complete system that meets all of the claim limitations, the circuitry in the wafers that Samsung fabricated in Texas are not capable of performing any of the accused functionalities until additional manufacturing steps are performed in Korea. (See Dkt. 678 at 49-54; *infra* pp. 78-86.) WARF never explains how the [REDACTED] [REDACTED] could supposedly execute load and store instructions out-of-program order, detect data dependence and detect mis-speculations, use a prediction threshold detector to prevent speculation when the prediction is within a predetermined range, or meet any other claim limitation. And WARF similarly never describes how “Apple’s cSim simulator would infringe” or why that would supposedly entitle WARF to damages “for every single product sold

worldwide.” (Dkt. 711 at 142.) WARF’s unexplained allegations of supposed inconsistencies in Apple’s arguments have nothing to do with invalidity and are insufficient to support the jury’s verdict of no invalidity.

2. Obviousness

Even if WARF were correct that Chen’s use of software in addition to hardware is an actual difference from the ’752 patent (though it is not), the only reasonable conclusion that the jury could have reached is that claims 1, 2, 3, and 9 are rendered obvious in light of Chen.²⁶ WARF does not dispute that implementing Chen’s technique exclusively in hardware would produce the invention claimed in the ’752 patent. Instead, WARF simply contends that a person of ordinary skill in the art would not have been motivated to make that change because software and hardware are supposedly “fundamentally different approaches.” (Dkt. 711 at 144.) But WARF’s documents and the testimony of WARF’s own witnesses refute that assertion. For example, Dr. Moshovos identified Chen’s technique as “related work” to the ’752 patent and acknowledges that it achieves the “same effect.” (DX1665.0071 (Moshovos Thesis); *see also* Dkt. 668, 10/09/2015 Trial Tr. 60:16-61:10, 63:22-24 (Mudge).) And Dr. Mahlke testified that “the goal of the IMPACT compiler project” was to use software to “get performance that was equivalent or better than using smart hardware,” which confirms that those in the field before

²⁶ WARF’s arguments with respect to Chen are inconsistent with the position that WARF has taken with respect to infringement, where WARF has repeatedly (and incorrectly) labeled distinctions between Apple’s products and the ’752 patent as additional features that do not preclude infringement of the ’752 patent’s open-ended claims. (*See, e.g.*, Dkt. 711 at 27-28, 39-40, 61, 87-91.) As explained above, the differences between Apple’s products and the ’752 patent are not merely additional features, but rather fundamental differences that show Apple’s products never meet the claim limitations. But if WARF were correct in its expansive interpretation of the ’752 patent’s open-ended claims, Chen’s use of software in addition to hardware should be no impediment to anticipation. *See ArthroCare Corp. v. Smith & Nephew, Inc.*, 406 F.3d 1365, 1372 (Fed. Cir. 2005) (recognizing that a reference may anticipate even if it contains embodiments with additional elements).

the '752 patent recognized that software and hardware could be used interchangeably to achieve the same objective. (Dkt. 668, 10/09/2015 Trial Tr. 100:7-13 (Mahlke).) No reasonable jury could have found software and hardware to be “fundamentally different” when even WARF’s own documents and witnesses highlight their similarities.

Contrary to WARF’s assertion, Dr. Colwell did not admit that it would be non-obvious “to implement Chen’s software functionality in hardware.” (Dkt. 711 at 145.) Dr. Colwell’s testimony was simply that it would not be necessary to adapt all of Chen’s software-based functionalities into order to achieve the same result in hardware. (Dkt. 666, 10/07/2015 Trial Tr. 248:14-249:5 (Colwell) (“I don’t think you’d have to.”).) WARF also criticizes Dr. Colwell’s testimony on obviousness as brief and supposedly lacking in detail. (Dkt. 711 at 145-146.) But Dr. Colwell had already testified at length about Chen’s technique. (Dkt. 666, 10/07/2015 Trial Tr. 99:25-113:17, 160:9-168:23 (Colwell).) There was no need for Dr. Colwell to rehash those details when opining on obviousness specifically, particularly where Apple’s obviousness theory simply involved implementing Chen’s existing software-hardware hybrid approach solely in hardware.

Finally, WARF contends that the same evidence of secondary considerations relevant to Apple’s obviousness defense based upon Hesson supports the jury’s verdict of no obviousness with respect to Chen. (Dkt. 711 at 146-147.) But as discussed above (pp. 62-65), WARF’s arguments with respect to secondary considerations are not supported by the record and, if anything, the evidence of secondary considerations confirms the obviousness of the asserted claims. No reasonable jury could have found that the evidence of secondary considerations sufficient to overcome the strong case of obviousness that Apple presented.

Accordingly, the Court should grant JMOL of invalidity for claims 1, 2, 3, and 9 as anticipated or obvious in view of Chen.

C. Alternatively, A New Trial Should Be Granted Because The Jury's Verdict Of No Invalidity Was Against The Manifest Weight Of The Evidence.

In the event that the Court does not grant JMOL of invalidity, Apple requests a new trial on invalidity because the jury's verdict is against the manifest weight of the evidence for the reasons described above in Sections II.A and II.B and in Apple's opening brief (Dkt. 678 at 35-48). In addition, if the Court grants a new trial on infringement, Apple is also entitled to a new trial on invalidity because the issues of infringement and invalidity are closely intertwined in this case. *See Witco Chem. Corp.*, 787 F.2d at 1549 ("[I]t is inappropriate, in light of the evidence presented and arguments made at this trial, to have one jury return a verdict on the validity, enforceability and contract questions while leaving the infringement questions to a second jury.").

WARF disputes that the issues of infringement and invalidity are related, such that a new trial on infringement would require a new trial on invalidity. (Dkt. 711 at 147-148.) But WARF's argument cannot be reconciled with how the parties tried the issues of infringement and invalidity in this case. Apple specifically highlighted the tension between WARF's arguments on infringement and invalidity to argue that the '752 patent cannot be both valid and infringed:

One of the questions for you to ask yourselves when you retire to the jury room is this: If the difference between just a load and a store according to Dr. Mudge is enough to make the WARF patent very different and very different from Hesson, ... how can it be that the Apple products that have more differences infringe? How can it be they have every limitation exactly? On the other hand, if you think that the differences between the Apple products and the WARF patent are not significant, then how can it be that the differences between Hesson and Steely and the WARF patent are not insignificant as well? WARF can't have it both ways. You can't make -- you can't look for small differences in one venue and not the other. They are either differences or they are not.

(Dkt. 669, 10/12/2015 Trial Tr. 72:4-25 (Apple Liability Closing).) And WARF similarly argued to the jury that Apple's positions on non-infringement and invalidity were supposedly

inconsistent. (Dkt. 668, 10/08/2015 Trial Tr. 202:7-204:19 (suggesting that Dr. August's testimony on non-infringement was inconsistent with Dr. Colwell's testimony on invalidity); Dkt. 669, 10/12/2015 Trial Tr. 15:20-16:20 (WARF Liability Closing) (referring to supposedly inconsistent testimony offered by Apple on the issues of invalidity and non-infringement).) WARF has reiterated those arguments post-trial, including in its opposition to this motion. (Dkt. 711 at 22-23 (arguing that Dr. Colwell's testimony on invalidity was inconsistent with Dr. August's testimony on non-infringement); *id.* at 142 (arguing that Apple's non-infringement arguments for vicarious liability are inconsistent with Apple's anticipation defense based upon Chen); *see also* Dkt. 683 at 50-51 ("Apple Presented Mutually Inconsistent Non-Infringement and Invalidity Theories at Trial").) Having attempted to leverage the issues of infringement and validity against each other, WARF cannot now contend that they are separate issues that need not be tried together.²⁷

Indeed, there is a fundamental tension between WARF's positions on infringement and validity. With respect to validity, WARF argued that Hesson is "very different" from the '752 patent, despite the fact that the only difference between Hesson and the '752 patent is that Hesson tracks predictions by store instructions and the '752 patent tracks predictions by load instructions (claim 1) or load/store pairs (claim 9). (Dkt. 667, 10/08/2015 Trial Tr. 298:20-299:5

²⁷ WARF has mixed the issues of infringement and validity at other times as well. For example, WARF attempted to bolster its infringement claim by arguing that Apple "needed" the invention of the '752 patent because Apple's accused chips contain billions of transistors. (*E.g.*, Dkt. 669, 10/12/2015 Trial Tr. 76:9-77:1 (WARF Liability Closing).) At the same time, in response to Apple's obviousness arguments, WARF relied on the smaller number of transistors in 2000 and 2001 to attempt to explain away the fact that no one licensed the '752 patent. (*E.g.*, Dkt. 669, 10/12/2015 Trial Tr. 75:7-15 (WARF Liability Closing) ("So there was a lack of licensing interest among these companies in early 2000/2001.... The chips that they made weren't that complex yet, so they didn't have a need for it.... So the lack of licensing interest is not surprising.").) Because WARF sought to make the issue of transistor counts relevant to both infringement and invalidity, any new trial should address both issues together.

(Mudge); Dkt. 668, 10/09/2015 Trial Tr. 36:9-10, 72:9-74:6 (Mudge); *see also* Dkt. 664, 10/05/2015 Trial Tr. 180:13-14 (WARF Liability Opening) (arguing that the '752 patent is “really completely different” from Hesson).) Yet for purposes of infringement, WARF argued that the even greater differences between Apple’s accused products and the '752 patent were not meaningful. (*E.g.*, Dkt. 665, 10/06/2015 Trial Tr. 164:4-169:18 (Conte) (testifying that Apple’s use of a hashed Load Tag satisfies the claim requirement of associating a prediction with a “particular” load instruction because the incidence of aliasing is supposedly low); Dkt. 668, 10/09/2015 Trial Tr. 134:6-19 (Conte) (opining that the Apple’s products satisfy the claim requirement of “detecting a mis-speculation” despite the absence of an explicit check to determine whether a mis-speculation has occurred).) Without the context of WARF’s arguments on infringement, a jury cannot fairly evaluate WARF’s arguments with respect to invalidity (and vice versa). A new trial on one issue therefore requires a new trial on the other.

III. APPLE IS ENTITLED TO JUDGMENT AS A MATTER OF LAW OR A NEW TRIAL ON WARF’S VICARIOUS LIABILITY CLAIM.

A. The Court Should Enter Judgment In Apple’s Favor On WARF’s Vicarious Liability Claim.

Although U.S. patent law does “not extend to foreign activities,” *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 455 (2007), WARF sought—and the jury awarded—damages for A7 chips that required substantial manufacturing steps to be performed by Samsung in Korea and that were never sold or imported into the United States. WARF argued that Apple was vicariously liable for these wafers that Samsung partially fabricated in Texas before being shipped to Korea for completion. As Apple explained in its opening brief (Dkt. 678 at 49-66), WARF failed to satisfy the legal requirements necessary to support that liability theory.

In response, WARF does not dispute that it had to prove both that “(1) [the wafers] infringe when they leave the United States and (2) Samsung’s manufacturing is attributable to Apple.” (Dkt. 649 at 2 (Closing Damages Instructions); *see* Dkt. 711 at 156, 172.) Nonetheless, WARF argues that (1) incomplete wafers that require structural modifications to perform the claimed functionality directly infringe the ’752 patent, and (2) an arms-length purchaser-supplier agreement between Apple and Samsung that [REDACTED] is sufficient to make Apple liable for Samsung’s manufacturing decisions. WARF’s arguments misstate the facts and are contrary to Supreme Court and Federal Circuit precedent. Because under the correct legal standards and undisputed facts no reasonable jury could have found in favor of WARF, judgment as a matter of law should be entered in Apple’s favor on WARF’s vicarious liability claim and the damages award reduced by \$80.6 million—the amount attributable to the A7 chips manufactured by Samsung in Korea.²⁸

1. No reasonable jury could have found that the wafers manufactured by Samsung are capable of infringing before they leave the United States.

WARF provided no evidence at trial from which a reasonable jury could have found that Samsung’s wafers directly infringe the ’752 patent before they leave the United States. The parties agree that, to prove direct infringement, WARF had to show that Samsung’s wafers are “reasonably capable of satisfying the claim limitations” of the ’752 patent at the time the wafers leave the United States. (Dkt. 678 at 49-50 (Apple Opening Brief) (quoting *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1204 (Fed. Cir. 2010)); Dkt. 711 at 148 (WARF Response Brief).) The parties also agree that “the language of the claims, as well as the nature of the accused product, dictates whether an infringement has occurred.” (Dkt. 678 at 54 (Apple

²⁸ WARF does not dispute that, if the Court grants Apple’s JMOL motion on this issue, the damages award should be reduced by \$80.6 million. (*See* Dkt. 711 at 200.)

Opening Brief) (quoting *Fantasy Sports Properties, Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002)); Dkt. 711 at 162 (WARF Response Brief).) Finally, the parties agree that the asserted claims require “a processor capable of”:

executing program instructions in an execution order differing from their program order [and] having a data speculation circuit for detecting data dependence between instructions and detecting a mis-speculation where a data consuming instruction dependent for its data on a data producing instruction of earlier program order ... is in fact executed before the data producing instruction.²⁹

(Dkt. 678 at 50-51 (quoting PX1.0017-.0018, at claims 1, 9 ('752 Patent)); Dkt. 711 at 149.)

a. Partially manufactured products that require structural modifications to perform the claimed functionality are not “capable of” infringing.

WARF contends that partially manufactured products, like Samsung’s wafers, that require structural modifications to perform the claimed functionality are still “reasonably capable of satisfying the claim limitations.” *Finjan*, 626 F.3d at 1204. But as Apple explained in its opening brief, under binding Federal Circuit law, devices that must be modified to perform the required functionality do not infringe. *See, e.g., Nazomi Commc’ns Inc. v. Nokia Corp.*, 739 F.3d 1339, 1342, 1346 (Fed. Cir. 2014) (holding that accused processors were not “capable of executing a plurality of instruction sets” because they “***do not infringe without modification***—the modification of installing the required software” (emphasis added)); *see also* Dkt. 678 at 50, 53 (citing *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1379 (Fed. Cir. 2011);

²⁹ WARF erroneously contends that Apple is arguing that the asserted claims require that Samsung’s wafers “actually be doing things.” (Dkt. 711 at 149.) That is not Apple’s argument. Instead, the issue is whether, before the additional manufacturing steps are taken in Korea, the wafers are “reasonably capable of” performing the claimed functionality. *Finjan*, 626 F.3d at 1204. Apple’s position is consistent with Dr. August’s testimony that claim 1 does not require “that the processors actually be doing things.” (Dkt. 672, 10/15/2015 AM Trial Tr. 150:8-11.)

Revolution Eyewear, Inc. v. Aspex Eyewear, Inc., 563 F.3d 1358, 1370 (Fed. Cir. 2009)).³⁰ And, in this case, the undisputed evidence at trial showed that Samsung’s wafers must be bumped, fused, and singulated in Korea before they can satisfy the claimed limitations of the ’752 patent under WARF’s theory of literal infringement. (Dkt. 678 at 51-52.)

In response, WARF argues that accused devices can “still infringe even though they [a]re incapable of performing the claimed functionality until” structural modifications are made. (Dkt. 711 at 166.) Under WARF’s broad rationale, there would be no limit to when a partially constructed device would infringe an apparatus claim on the theory that it was capable of performing the recited functionality, even if that device would require significant modifications to do so. WARF’s argument is not—and cannot—be the law. *See Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1262 (Fed. Cir. 2013) (“[A] device does not infringe simply because it is possible to alter it in a way that would satisfy all the limitations of a patent claim.” (internal quotation marks omitted)); *see also* Dkt. 678 at 54 (citing *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1330 (Fed. Cir. 2001); *High Tech Medical Instrumentation, Inc. v. New Image Indus., Inc.*, 49 F.3d 1551, 1555 (Fed. Cir. 1995)).

WARF’s view has been rejected by the very cases WARF cites to support its arguments, because each states that the accused products would not have infringed if modifications were required. (Dkt. 711 at 163-167.) In *Silicon Graphics, Inc. v. ATI Technologies, Inc.*, 607 F.3d 784 (Fed. Cir. 2010), the court ruled that a claim requiring capability is infringed only when “the product is designed ‘in such a way as to enable a user of that [product] to utilize the function ... without having to modify [the product].’” *Id.* at 794 (internal quotation marks omitted)

³⁰ WARF’s attempt to distinguish these cases on their facts is misplaced. (Dkt. 711 at 166-171.) WARF cannot dispute that these cases support the general legal proposition that accused devices are not capable of infringing where structural modifications are necessary to perform the claimed functionality.

(alterations in original) (emphasis added). The court upheld infringement there because the accused products required no structural modification to infringe but simply needed to be “combined with an operating system” to perform the claimed functionality. *Id.* Similarly, in *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197 (Fed. Cir. 2010), the defendant’s software infringed because the relevant module was “resident in the binary source code that is ***in the product***” and there was “***no evidence that customers needed to modify the underlying code*** to launch any software modules.” *Id.* at 1205 (emphases added). And, in *Fantasy Sports Properties, Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108 (Fed. Cir. 2002), the accused product infringed because “***the user would [not] be required to alter the code*** to enable the computer to carry out” the claimed functionality. *Id.* at 1118 (emphasis added).

b. The wires and transistors that are laid down in Texas are not completed circuitry capable of performing the required functions.

Perhaps recognizing the flaws in its legal position, WARF next contends that a “reasonable jury could have weighed the facts and concluded that” the manufacturing steps Samsung performs overseas “did not ***detract*** from the pre-existing capability of the processor.” (Dkt. 711 at 162 (emphasis added).) WARF’s primary factual argument is that the wafers infringe because “the circuitry [which] contains each of the elements specifi[ed] in the asserted claims … is created in Austin” before the wafers are shipped overseas. (*Id.* at 149.) WARF continuously repeats this “circuitry” argument throughout its brief. (See *id.* at 151-152, 163-164, 166, 168, 170-172.) Yet, no matter how many times WARF rehashes the same argument, it was undisputed at trial that the wires and transistors that are laid down in Texas are not completed circuitry in “a processor capable of … executing program instructions in an execution order differing from their program order” (PX1.0017) and are not capable of performing the claimed functionality.

To begin with, it was undisputed that the initial manufacturing step that Samsung performs in Texas is photolithography, where wires and transistors are placed on the wafers. (*See, e.g.*, Dkt. 670, 10/13/2015 Trial Tr. 161:14-16 (Conte) (acknowledging that Samsung does “photolithography on the wafer” in Austin); Dkt. 672, 10/15/2015 AM Trial Tr. 109:7-21 (August) (stating that “photolithography” is the “initial fabrication step” performed in Texas where “wires and transistors … go on th[e] wafer”); *id.* at 148:4-20 (acknowledging that the “photolithography transistors and wires” “are placed … on the wafer in Austin, Texas”); Dkt. 640-2 at 54:15-16 (McNamara Dep.) (stating that Samsung “put[s] transistors on a wafer” in Texas); Dkt. 674, 10/14/2015 PM Trial Tr. 135:20-136:1 (Williams) (stating that the “lithography … are actually printed” in Texas).)

No reasonable jury could have found that the wires and transistors that are laid down in Texas become completed circuitry capable of performing the required functions until they are bumped, fused, and singulated in Korea.³¹ (*See, e.g.*, Dkt. 670, 10/13/2015 Trial Tr. 162:7-9

³¹ WARF contends that Dr. August’s testimony that the fuses need to be blown to complete the circuitry “is an undisclosed theory that has been waived.” (Dkt. 711 at 157.) WARF’s argument was rejected by the Court at trial and has no merit, and Dr. August’s testimony on this point was presented to the jury.

At trial, the Court denied WARF’s request to strike Dr. August’s fusing testimony because he had disclosed the opinion in his expert report. (Dkt. 672, 10/15/2015 AM Trial Tr. 115:23 (THE COURT: “I’m not going to strike it.”); *see* Dkt. 103 (August Non-Infringement Report) ¶¶ 412-413.) Although WARF complained that Dr. August’s fusing testimony did not mimic the exact wording in his expert report, the Court also rejected that argument because “[t]he implication is the same” in both his testimony and expert report. (Dkt. 672, 10/15/2015 AM Trial Tr. 115:20-21.) Furthermore, Dr. August’s opinion was consistent with Mr. Williams’ testimony at trial that the circuits cannot operate “before the fuses are blown.” (Dkt. 674, 10/14/2015 PM Trial Tr. 136:21-23 (Williams).)

WARF’s contention that Apple failed to disclose Dr. August’s fusing opinion in an interrogatory response is also incorrect. (Dkt. 711 at 158.) In response to Interrogatory No. 4 that Apple “state with particularity all bases for Apple’s assertion that Apple is not infringing and has not infringed … any claim of the ’752 patent,” Apple expressly incorporated Dr. August’s expert report containing his fusing opinion. (Dkt. 413-5, at 12 (Apple’s Seventh Supp. Responses to WARF’s First Set of Interrogatories); *see id.* at 65 (“Apple expressly incorporates

(Conte) (acknowledging that “you need to put the bumps on the chip to be able to power the chip, to apply power”); Dkt. 672, 10/15/2015 AM Trial Tr. 148:8-10 (August) (“I wouldn’t characterize [the transistors and wires] as being the logic circuits because they’re not complete.”); *id.* at 113:7-10 (August) (“Q. At the point at which the wafer leaves the manufacturing facility at Samsung in Texas, can any of the circuitry actually process instructions? A. No, they cannot.”); *id.* at 110:14-15 (stating that fuses must be blown to “configure the circuitry into its final form”); Dkt. 640-2 at 119:7-9 (McNamara Dep.) (“[I]n order for the circuitry to function as circuitry, the bumps have to be there. … [Y]ou have to apply power to the chip for the circuitry to function as circuitry.”); *id.* at 119:3-4 (“[T]he bump is part of the circuitry.”); Dkt. 674, 10/14/2015 PM Trial Tr. 136:21-23 (Williams) (“Q. And before the fuses are blown, can the circuits operate? A. No they cannot actually.”).)³²

by reference the Rebuttal Expert Report of David August, Ph.D. Regarding Non-Infringement of U.S. Patent No. 5,781,752, served on March 12, 2015, all Exhibits thereto, and all documents cited therein.”).) WARF’s argument relies on Interrogatory No. 18, which broadly requested Apple to describe “the role Apple and any third party plays or has played in its manufacture” of “each Accused Processor.” (Dkt. 712-1 at 7.) Apple provided a detailed 20-page response to that interrogatory. (*Id.* at 7-26.) With regard to Samsung’s activities in Korea, Apple stated: “Samsung must take additional manufacturing steps—all of which occur in Korea—before the wafers can function in Apple’s products.” (*Id.* at 15.) WARF never followed up with any other interrogatory requesting Apple to explain all of the specific manufacturing steps that Samsung performs in Korea. Regardless, Apple had already disclosed those details to WARF by expressly incorporating Dr. August’s expert report in Apple’s response to Interrogatory No. 4. (Dkt. 413-5 at 65.) And, although Dr. August disclosed his fusing opinion in his expert report, WARF never asked him a single question about fusing in his deposition. (*See* Dkt. 238 (August Dep.).)

³² WARF is thus incorrect that Dr. August “admitted that all of the circuitry recited in the asserted claims of the ’752 patent is manufactured in Austin, Texas.” (Dkt. 711 at 151.) Dr. August explained that the “transistors and wires” are manufactured in Austin, Texas, and explicitly rejected WARF’s contention that this constituted completed “circuitry.” (Dkt. 672, 10/15/2015 AM Trial Tr. 110:14-15, 113:7-10, 148:9-10 (August).) Likewise WARF is incorrect that Mr. Williams “admit[ted] that the blowing of fuses” simply “enable[s]” circuits already contained in Samsung’s wafers. (Dkt. 711 at 168.) He explicitly rejected that assertion. (Dkt. 674, 10/14/2015 PM Trial Tr. 136:21-23 (Williams) (“Q. And before the fuses are blown, can the circuits operate? A. No they cannot actually.”).)

WARF attempts to compare the structural modifications that Samsung performs in Korea to minor steps needed to “activate” an apparatus that already includes the claimed functionality. (Dkt. 711 at 162.) For example, relying on *Finjan*, WARF suggests that Samsung’s partially manufactured wafer should be compared to a software program that needs to be “activated” by a purchasing key or “an automobile engine [that] exists in a car even when the car is turned off.” (Dkt. 711 at 165 (quoting *Finjan*, 626 F.3d at 1205).) At trial, Dr. Conte also compared the wafer to a house that has already been built but “people haven’t moved in.” (Dkt. 670, 10/13/2015 Trial Tr. 126:6-11 (Conte).) But none of those analogies is apt, and none can obscure the facts. More suitable comparisons to a wafer that has not been bumped, fused, or singulated would be: (1) an incomplete software program that cannot perform any function regardless of whether a purchasing key is needed, (2) a car missing a battery and other critical components that cannot turn on even if the driver has the ignition key, or a (3) a partially constructed house without any electricity that is unsuitable for human living.

As explained in Apple’s opening brief (Dkt. 678 at 53), Samsung’s wafers are similar to the accused devices in *Nazomi Communications Inc. v. Nokia Corp.*, 739 F.3d 1339 (Fed. Cir. 2014), because they “cannot perform the functionality described in [the] asserted claims” without modifications performed overseas. *Id.* at 1342. The Federal Circuit stated that where “the structure … necessary to enable” the performance of the claimed functions “is not even present on the accused products” and the installation of that structure “add[s] new functionality not currently present,” the products do not infringe. *Id.* at 1346. Here, the evidence was undisputed that Samsung’s wafers are not capable of performing the claimed functionality until they are altered overseas, and the modifications of bumping, fusing, and singulating “add new functionality not currently present” on the wafers. *Id.*

c. The other evidence cited by WARF does not prove that Samsung's wafers are capable of infringing.

The other evidence that WARF cites in its brief also does not demonstrate that Samsung's wafers are capable of infringing before they leave the United States. *First*, WARF claims that Apple admitted that the wafers "satisfy the capability requirement in the claims" in Request for Admission No. 25. (Dkt. 711 at 153.) But Apple's response to that Request for Admission did no such thing. Apple admitted that "the Accused **Processors** are capable of executing program instructions in an execution order differing from their program order." (PX0681-R.0001 (emphasis added).) As Apple has consistently argued, a partially manufactured wafer is not a processor, and Apple has never admitted that Samsung's wafers are capable of doing anything. (Dkt. 678 at 50-51.)

Second, WARF argues that the Samsung wafers infringe because they can hypothetically be "tested on a test fixture immediately after the chip is manufactured in Austin, Texas." (Dkt. 711 at 154.) However, WARF provided no evidence linking the theoretical possibility of "testing" the wafers with the capability of the wafers to satisfy the claim elements of the '752 patent. There was no showing at all that anything on the wafers before the fuses were blown and the bumps were added was "a processor capable of ... executing program instructions in an execution order differing from their program order" much less that it was capable of "detecting data dependence between instructions and detecting a mis-speculation where a data consuming instruction dependent for its data on a data producing instruction of earlier program order ... is in fact executed before the data producing instruction." (PX1.0017 ('752 Patent).) Indeed, Dr. Conte admitted that he did not "perform that test" and "can't do that" in this case, and the Court struck "any reference to what the testing would be since [Dr. Conte] didn't do it, and it's not part of his [expert] report." (Dkt. 673, 10/16/2015 Trial Tr. 61:20-62:5.) Dr. Conte also admitted

that he had “no evidence that any such testing has been performed in the United States” and that “Samsung performs testing and configuration in Korea.” (Dkt. 670, 10/13/2015 Trial Tr. 163:6-11 (Conte); *see also* Dkt. 673, 10/16/2015 Trial Tr. 65:5-12 (Conte).)

Finally, WARF argues that an internal Apple document provides evidence that the wafers infringe before leaving the United States because its title describes [REDACTED]

[REDACTED] (Dkt. 711 at 155 (quoting PX0076.0001).)

However, the document’s title says nothing about the structure and composition of any Samsung “chips” before they are shipped to Korea for completion. In fact, the same document describes [REDACTED]

(PX0076.0001 (emphasis added).) The undisputed evidence demonstrated that the things manufactured by Samsung—whether called “chips” or “wafers”—are not capable of satisfying the claimed limitations until additional manufacturing steps are performed overseas. (Dkt. 678 at 51-52.) Therefore, no reasonable jury could have found that the Samsung wafers infringe the ’752 patent before leaving the United States.

2. No reasonable jury could have found that Samsung’s manufacturing of wafers in the United States was attributable to Apple.

To succeed on its vicarious liability claim, WARF also had to prove that Samsung’s manufacturing decisions when fabricating the wafers were attributable to Apple. As explained in Apple’s opening brief (Dkt. 678 at 54-61), WARF presented no evidence from which a reasonable jury could have held Apple accountable for Samsung’s actions. In its opposition brief, WARF misstates the law on vicarious liability and, even under the legal standard included in the jury instructions (to which Apple objected as incorrect), fails to identify sufficient evidence to demonstrate that Samsung’s manufacturing decisions were “under Apple’s control or direction.” (Dkt. 711 at 181.) Instead, WARF takes the unprecedented position that Apple can be held liable

for Samsung's actions simply because the two companies entered into an arms-length purchaser-supplier agreement, even though the agreement [REDACTED]

[REDACTED] WARF's failure to demonstrate that Samsung's [REDACTED]

[REDACTED] —were attributable to

Apple provides an additional, independent reason for granting JMOL in Apple's favor on WARF's vicarious liability claim.

a. **Under the correct legal standard, WARF's vicarious liability claim fails.**

i. **A principal-agent relationship is necessary to establish vicarious liability under the Patent Act.**

As explained in Apple's opening brief, Supreme Court and Federal Circuit precedent establish that to hold Apple liable under a tort theory of vicarious liability, WARF had to demonstrate that Apple and Samsung entered into a principal-agent relationship. (Dkt. 678 at 55-56 (citing *Meyer v. Holley*, 537 U.S. 280, 285-86 (2003); *Centillion Data Sys., LLC v. Qwest Commc'n Int'l, Inc.*, 631 F.3d 1279, 1287 (Fed. Cir. 2011); *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1311-12 (Fed. Cir. 2005)).) In response, WARF contends that its claim does not concern *tort* liability for vicarious liability, but rather “*statutory* liability for *patent infringement*. ” (Dkt. 711 at 172-173 (emphasis in original).)

WARF's argument is contradicted by the Patent Act itself. The Patent Act of 1952 contains no provision providing for vicarious liability. Instead, the statute includes detailed provisions for inducement and contributory infringement, the only statutory theories under which a defendant can be held liable for a third party's infringement. *See* 35 U.S.C. § 271(b), (c); *see also id.* § 271(f). But WARF explicitly withdrew its infringement claims under those statutory sections before trial and instead sought “damages from Apple ... on the theory that Apple is

vicariously liable for the processors made by its contract manufacturer, Samsung, in the United States.” (Dkt. 485 at 9-10.)

To the extent a statute implicitly allows for tort liability under a vicarious liability theory, the Supreme Court has held that the statute can only incorporate “traditional” principles, and an employer-employee or principal-agent relationship is necessary to prove vicarious liability. *Meyer*, 537 U.S. at 285.³³ The Federal Circuit has also recognized that an agency relationship must be established for a defendant to be held vicariously liable for infringing an apparatus claim. *See, e.g.*, *Centillion*, 631 F.3d at 1287; *Cross Med. Prods.*, 424 F.3d at 1311.

WARF attempts to distinguish this case law by relying on the Supreme Court’s decision in *Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd.*, 545 U.S. 913 (2005). (Dkt. 711 at 176-177.) However, to the extent *Metro-Goldwyn-Mayer Studios* is relevant, it further supports Apple’s position. In that case, the Supreme Court recognized that the Copyright Act contains no provision providing for vicarious liability, and, to the extent it applies, vicarious liability “emerge[s] from common law principles.” 545 U.S. at 930. The Court further acknowledged that, unlike the Copyright Act, which “does not expressly render anyone liable for infringement committed by another,” the Patent Act already includes codified sections on inducement and contributory infringement. *Id.* at 930, 932, 936 n.11; *see also id.* at 942 (Ginsburg, J, concurring) (noting that inducement and contributory infringement “are now codified in patent law”). And the Court expressly refused “to analyze separately [the plaintiff’s] vicarious liability theory” because it had “resolve[d] the case based on an inducement theory”—the same theory that

³³ WARF criticizes the Supreme Court’s decision in *Meyer* because “it was not even cited by the Federal Circuit in *Akamai* or in the numerous relevant decisions leading up to it.” (Dkt. 711 at 176 & n.29.) But, as explained below, the Federal Circuit had no reason to cite *Meyer* in those cases because they do not analyze the vicarious liability standard for apparatus claims, but rather the joint infringement standard for method claims. *See infra* pp. 89-91.

WARF abandoned in this case. *Id.* at 931 n.9. Thus, *Metro-Goldwyn-Mayer Studios* is consistent with Apple’s position that a principal-agent relationship is necessary to establish vicarious liability under the Patent Act.

ii. The *Akamai* standard for joint infringement of method claims does not apply to vicarious liability for apparatus claims.

WARF also contends that the Federal Circuit’s en banc decision in *Akamai Technologies, Inc. v. Limelight Networks, Inc.*, 797 F.3d 1020 (Fed. Cir. 2015), rejected Apple’s position that a principal-agent relationship is required to prove vicarious liability. (Dkt. 711 at 173-181.) It did not. *Akamai* provided the legal standard for joint infringement of method claims, not the standard for vicarious liability of apparatus claims. The *Akamai* court recognized that the “control or direction” standard urged by WARF applies to hold a defendant liable only when a third party performs one or more steps of a method claim. *See, e.g.*, 797 F.3d at 1022 (“[W]here [an] entity **directs or controls** others’ performance,” that “entity [is] responsible for others’ performance of **method steps**.”) (emphases added)). Moreover, *Akamai* explicitly rejected WARF’s argument that the standard applies to vicarious liability. *See id.* at 1022 n.2 (noting that, in the context of joint infringement of method claims, “**use of the term ‘vicarious liability’ is a misnomer**” (emphasis added)); *see also id.* (recognizing that “**vicarious liability is not a perfect analog**” (emphasis added))).³⁴

WARF’s only response to these clear statements in *Akamai* is to misquote the court’s opinion. WARF contends that the Federal Circuit referred to vicarious liability as a “misnomer”

³⁴ For this reason, all of the cases that WARF cites to support its “control or direction” standard are misplaced. (Dkt. 711 at 174-175.) And, although the Federal Circuit in *BMC Resources, Inc. v. Paymentech, LP*, 498 F.3d 1373 (Fed. Cir. 2007), referred to the joint infringement standard for method claims as “impos[ing] vicarious liability,” *id.* at 1379, the en banc court in *Akamai* explicitly stated that *BMC*’s “use of the term ‘vicarious liability’ is a misnomer.” *Akamai*, 797 F.3d at 1022 n.2.

because “[t]he Defendant ‘is not liable for a third party’s commission of infringement,’ but rather is responsible for the third party’s ‘activities,’ which may then be treated as though performed by the Defendant itself in a direct infringement analysis under § 271(a).” (Dkt. 711 at 180 (quoting selected excerpts from *Akamai*, 797 F.3d at 1022 n.2, but changing the context).) However, that is not what the Federal Circuit said. The court recognized that joint infringement and vicarious liability are two distinct concepts with their own legal standards. On the one hand, a defendant may be liable for joint infringement when it performs some steps of a method claim, but directs or controls a third party to perform other steps of that claim. *See Akamai*, 797 F.3d at 1022 n.2 (“In the context of joint patent infringement, an alleged infringer is not liable for a third party’s commission of infringement—rather, ***an alleged infringer is responsible for method steps performed by a third party.***” (emphasis added)). On the other hand, a defendant can be vicariously liable for infringing an apparatus claim when a third party manufactures an infringing device only when the circumstances are such that it is fair to treat the manufacture by the third party ***as if*** the device were manufactured by the defendant.

In this case, for example, WARF alleges that Apple should be held liable for Samsung’s fabrication of allegedly infringing wafers in Texas as if the wafers had been fabricated by Apple. But, as explained below, [REDACTED] [REDACTED]. *See infra* pp. 98-101. Moreover, under longstanding vicarious liability law, to hold a defendant liable for a third party’s conduct, the third party must be the defendant’s agent or employee—and Samsung was neither. *See supra* pp. 87-88 (citing *Meyer*, 537 U.S. at 285; *Centillion*, 631 F.3d at 1287; *Cross Med. Prods.*, 424 F.3d at 1311).

iii. ***Centillion supports the distinction between joint infringement of a method claim and vicarious liability for an apparatus claim.***

WARF next argues that the Federal Circuit's decision in *Centillion Data Systems, LLC v. Qwest Communications Intel, Inc.*, 631 F.3d 1279 (Fed. Cir. 2011), "directly addressed ***and rejected***" the distinction that Apple and the *Akamai* court have drawn between joint infringement of a method claim and vicarious liability of an apparatus claim. (Dkt. 711 at 178.) WARF is incorrect. Consistent with Apple's argument, the *Centillion* court noted that the "control or direction" standard applied when "one party could be liable for infringement of a method claim even if it did not perform all of the steps." *Centillion*, 631 F.3d at 1287. The court then distinguished that standard from the "vicarious liability [standard] for ***making a claimed apparatus*** or system under [35 U.S.C.] § 271(a)." *Id.* (emphasis added).

The Federal Circuit recognized that, in *Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293 (Fed. Cir. 2005), it had previously held that a principal-agent relationship was required to establish vicarious liability for making a claimed apparatus.³⁵ See *Centillion*, 631 F.3d at 1287 ("We held that the manufacturer did not 'make' the claimed apparatus. We noted that the manufacturer would not be liable for the [third party's] direct infringement unless the [third party] ***acted as an agent*** of the manufacturer" (citing *Cross Medical*, 424 F.3d at 1311) (emphasis added)). The court added that the principal-agent "test of *Cross Medical* for vicarious liability" applied "where a third party assembled the complete system." *Centillion*, 631 F.3d at 1287. And, just like in *Cross Medical*, the Federal Circuit held

³⁵ While WARF recognizes that the Federal Circuit in *Cross Medical* held "that a principal-agent relationship is required" to hold a defendant vicariously liable for infringing an apparatus claim, it argues that the court's decision was overruled by *Akamai*. (Dkt. 711 at 179 n.30.) *Akamai* did not overrule *Cross Medical*. *Akamai* only "overruled" cases that had previously held that the standard for joint infringement of method claims was "limited solely to principal-agent relationships, contractual arrangements, and joint enterprise." 797 F.3d at 1023 & n.3.

that the defendant in *Centillion* was “not vicariously liable for the actions of its customers” because they did “not act as [its] agents as a matter of law.” *Id.* at 1288. Indeed, WARF has not cited a single case where a defendant has been held vicariously liable for infringing an apparatus claim.³⁶

iv. WARF’s other legal arguments are all premised on the incorrect *Akamai* method claim standard.

WARF’s other legal arguments are also based on its erroneous view that the *Akamai* method claim standard applies to apparatus claims. Contrary to WARF’s assertion (Dkt. 711 at 173), the Federal Circuit has never, let alone “repeatedly,” “rejected Apple’s position” that a principal-agent relationship is necessary to vicariously infringe an apparatus claim. The court has only held that the method claim standard for joint infringement “is not limited solely to principal-agent relationships,” which it explicitly distinguished from vicarious liability. *Akamai*, 797 F.3d at 1023; *see id.* at 1022 n.2. Moreover, to Apple’s knowledge, neither the Supreme Court nor the Federal Circuit (or any other court) has held that a mere “contractual obligation” is sufficient to hold a defendant vicariously liable for infringing an apparatus claim. (Dkt. 711 at 174.) Every case that WARF cites to support this proposition found a contractual relationship sufficient to establish liability for joint infringement of method claims only. (*See id.* at 174-175 (citing cases).) And while *Akamai* may have broadened the “control or direction” standard (Dkt. 711 at 175), the Federal Circuit clarified that its new standard only applied for method claims.

³⁶ WARF argues that *Centillion* held that the “control or direction” standard applied to vicarious liability claims because the court noted that the defendant’s customers were not “‘contractually obligated … to act.’” (Dkt. 711 at 178-179 (quoting *Centillion*, 631 F.3d at 1288).) However, the court ruled that “Qwest [wa]s not vicariously liable for the actions of its customers” because “Qwest in no way directs its customers to perform nor do its customers act as its agents.” 631 F.3d at 1287. To the extent *Centillion* could be read to suggest that the “control or direction” standard may be relevant to vicarious liability for infringing an apparatus claim, the en banc court in *Akamai* made clear that standard only applies to joint infringement of method claims. *See Akamai*, 797 F.3d at 1022-23.

See 797 F.3d at 1023 (holding that liability for joint infringement of a method claim may be imposed where an actor “conditions participation in an activity or receipt of a benefit **upon performance of a step or steps of a patented method** and establishes the manner or timing of that performance” (emphasis added)).³⁷

v. **It is undisputed that Apple and Samsung did not have a principal-agent relationship.**

Perhaps recognizing that a principal-agent relationship is required to establish vicarious liability in this case, WARF next argues that the “undisputed evidence establishes a principal-agent relationship” between Apple and Samsung. (Dkt. 711 at 192.) WARF’s argument fails because it has no basis in agency law, and the undisputed facts demonstrate that WARF has not met its burden of proving that an agency relationship has been created. *See* Restatement (Third) of Agency § 1.02 cmt. d (2006) (“The party asserting that a relationship of agency exists generally has the burden in litigation of establishing its existence.”).

First, to the extent that [REDACTED] (Dkt. 711 at 193; DX1288.0022 (¶ 16.12)), the California civil code defines an agent as “one who represents another, called the principal, **in dealings with third persons**. Such representation is called agency.” Cal. Civ. Code § 2295 (emphasis added). Therefore, to establish an agency relationship, the agent must represent the principal in dealings with at least one third party.³⁸ *See*,

³⁷ WARF’s reliance on *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004), is similarly inapposite. *Pellegrini* did not discuss the vicarious liability standard for infringement of apparatus claims, but rather the standard for infringement under 35 U.S.C. § 271(f). *Id.* at 1116-18. WARF withdrew its claim against Apple under that provision (Dkt. 485 at 9-10), and *Pellegrini* has no relevance to this case.

³⁸ For this reason, the Restatement’s agency standard relied on by WARF must be read in the context of an agent’s dealings with third parties on behalf of a principal. (*See* Dkt. 711 at 194 (quoting Restatement (Third) of Agency § 1.01).) An agency relationship is only created when the principal “manifests assent to” the agent “that the agent shall act … on the principal’s behalf and … subject to the principal’s control” **in its dealings with third parties**. Restatement

e.g., *Huong Que, Inc. v. Luu*, 150 Cal. App. 4th 400, 413 (Cal. Ct. App. 2007) (“[A] relationship of agency *always contemplates three parties*—the principal, the agent, and the third party with whom the agent is to deal.” (internal quotation marks omitted) (emphasis added)); *Yalter v. Endocare, Inc.*, No. SACV0380 DOC (MLGX), 2004 WL 5237598, at *6 (C.D. Cal. Nov. 8, 2004) (holding that no agency relationship was established because “[p]laintiffs have made no factual showing that [purported agent] had the right to alter [purported principal’s] legal relationship with third parties”). Samsung, by definition, cannot be Apple’s agent because [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Second, “[a]n agency is either actual or ostensible.” Cal. Civ. Code § 2298. “An agency is actual when the agent is really employed by the principal.” *Id.* § 2299. “An agency is ostensible when the principal intentionally, or by want of ordinary care, causes a third person to believe another to be his agent who is not really employed by him.” *Id.* § 2300; *see generally Van’t Rood v. Cty. of Santa Clara*, 113 Cal. App. 4th 549, 570 (Cal. Ct. App. 2003) (discussing and applying the standards for actual and ostensible agency under California law). WARF cannot demonstrate agency under either of these theories. An actual agency theory fails because it is undisputed that Samsung has never been Apple’s employee. An ostensible agency theory

(Third) of Agency § 1.01; *see* Cal. Civ. Code § 2295. If WARF’s argument were correct, then almost any bilateral contractual agreement would establish an agency relationship. Yet, the Restatement explicitly rejects that position. *See id.* § 1.01(f)(1) (distinguishing “principals in agency relationships from those who contract to receive services provided by persons who are not agents”).

³⁹ [REDACTED]

[REDACTED]

[REDACTED]

fails because WARF has not shown “some intentional conduct or neglect on the part of [Apple] creating a belief in the minds of third persons that an agency exists, and a reasonable reliance thereon by such third persons.” *Goldman v. SunBridge Healthcare, LLC*, 220 Cal. App. 4th 1160, 1173 (Cal. Ct. App. 2013). The only evidence relied on by WARF to suggest the existence of an agency relationship is the A7 chip manufacturing contracts between Apple and Samsung, and Samsung’s obligations under those contracts. (*See* Dkt. 711 at 195 (“[T]he contracts they entered into established a relationship that meets the elements of a principal-agent relationship as a matter of law.”).) However, “[o]stensible agency cannot be established by the representations or conduct of the purported agent.” *Costco Wholesale Corp. v. Tokio Marine & Nichido Fire Ins. Co.*, No. B250794, 2015 WL 7566747, at *10 (Cal. Ct. App. Nov. 24, 2015). Therefore, WARF’s detailed recounting of Samsung’s duties under the contracts (Dkt. 711 at 196-199) are irrelevant to prove ostensible agency. WARF has not shown (and cannot show) that Apple intentionally or negligently created a belief in any third person that Samsung was Apple’s agent, or that a third person reasonably relied on such representation.

Third, WARF disregards [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] (emphasis added)).) While such statements are not always “determinative” (Dkt. 711 at 194), they are still “relevant to determining whether the parties consent to a relationship of agency.” Restatement (Third) of Agency § 1.02 cmt. b. Where, as here, the parties’ conduct is consistent with the contract’s terms, an explicit statement establishing the existence or absence of an agency relationship is highly persuasive evidence.

See, e.g., Leon v. Caterpillar Indus., Inc., 69 F.3d 1326, 1336 (7th Cir. 1995) (holding “that in light of … the very language in the sales agreement, which expressly disavows an agency relationship,” no agency relationship was established).⁴⁰

In this case, WARF has cited no evidence that Apple and Samsung acted contrary to their agreement. In fact, WARF’s only support for its agency theory are the contracts themselves. (Dkt. 711 at 195-200.) WARF’s unprecedented argument that some terms of a contract can create an agency relationship [REDACTED] is contrary to the basic principle of contract law that a contract’s provisions must be read as a whole. *See, e.g., Powerine Oil Co. v. Superior Court*, 118 P.3d 589, 598 (Cal. 2005) (“[L]anguage in a contract must be construed in the context of that instrument as a whole.”).

Finally, WARF’s position that the arms-length, purchaser-supplier agreement between Apple and Samsung created a principal-agent relationship has been rejected by longstanding agency law. The Restatement itself rejects WARF’s argument. The Restatement states that “those who contract to receive services” from another party are not “principals in agency relationships” despite the fact that the parties’ “agreement imposes constraints on the service provider” and “specifies terms and conditions creating contractual obligations that … prescribe or delimit the choices that the service provider has the right to make.” Restatement (Third) of Agency § 1.01 cmt. (f)(1). This is, in part, because—unlike in an agency relationship—“if the service provider breaches a contractual obligation, the service recipient has a claim for breach of

⁴⁰ The cases cited by WARF further support Apple’s point. In *Huong Que, Inc. v. Luu*, 150 Cal. App. 4th 400 (Cal. Ct. App. 2007), the court held that an agency relationship had been established because the appellants’ “agreement explicitly characterized them” as “managing agents,” and the parties had acted consistently with that agreement. *Id.* at 411-12. And, in *Smith v. Dep’t of Employment*, 62 Cal. App. 3d 206 (Cal. Ct. App. 1976), the court disregarded the contract’s explicit designation of workers as “independent contractors” only because the parties’ conduct demonstrated that they were—contrary to the contract’s language—employees. *Id.* at 212.

contract.” *Id.* Therefore, although Apple’s contracts with Samsung to manufacture A7 chips imposed certain obligations on Samsung (*see generally* DX1288; PX687), those obligations by themselves do not create an agency relationship.⁴¹

Courts have routinely rejected attempts at converting a purchaser-supplier relationship into a principal-agent one. *See, e.g., Wiley v. Yihua Int’l Grp.*, No. D053053, 2009 WL 3720903, at *11 (Cal. Ct. App. Nov. 9, 2009) (holding no agency relationship was created where parties “were buyer and seller, not principal and agent”); *Alvarez v. Felker Mfg. Co.*, 230 Cal. App. 2d 987, 1001 (Cal. Ct. App. 1964) (holding that “as a matter of law the relationship between [the parties] was not that of principal and agent, but rather that of seller and buyer”); *Yalter*, 2004 WL 5237598, at *7 (holding “no agency relationship existed” because “[t]he relationship ... is that of buyer and seller”). The only time a purchaser-supplier relationship may convert into a principal-agent one is when the duty of the purported agent “is to act primarily for the benefit of the” purported principal, and not “to act primarily for his own benefit.” *Alvarez*, 230 Cal. App. 2d at 1000. In this case, it is undisputed that Samsung’s contractual relationship with its “fierce competitor” Apple was [REDACTED]. (*See* DX1288.0008-.0013 (MDSA’s purchase and payment terms); *see also* Dkt. 670, 10/13/2015 Trial Tr. 174:11-12 (Conte) (acknowledging that “Apple and Samsung are fierce competitors”); Dkt. 673, 10/16/2015 Trial Tr. 78:2-8 (Lawton) (acknowledging that Apple and Samsung are “competitors in a fiercely competitive market”)). Because no reasonable jury could have found that a principal-agent

⁴¹ Notably absent from WARF’s brief are the obligations that Samsung has imposed on Apple in the contracts. [REDACTED]

relationship was established between Apple and Samsung, WARF's vicarious liability claim must fail.⁴²

b. Under the legal standard included in the jury instructions, WARF's vicarious liability claim still fails.

Even under the legal standard that the jury was instructed to apply, WARF's vicarious liability claim still fails because the jury could not have reasonably found that Samsung's manufacturing decisions when fabricating the wafers were "under Apple's control or direction." (Dkt. 649 at 2 (Closing Damages Instructions).) As explained in Apple's opening brief (Dkt. 678 at 59-62), the undisputed evidence demonstrated that [REDACTED]

[REDACTED]
i. Apple did not control where Samsung manufactured the wafers.

[REDACTED], WARF contends that fact is irrelevant and Apple is conflating the standards for infringement liability and vicarious liability. (Dkt. 711 at 187.) To the contrary, Apple is simply arguing that [REDACTED]

[REDACTED]—the critical decision that makes WARF's vicarious liability claim potentially viable, given that any act of alleged infringement must occur in the United States—demonstrates that no reasonable jury could have found that WARF met the "control or direction" standard. Notably, WARF itself admits that if Samsung had chosen to manufacture the wafers in Korea, then its vicarious liability claim would fail.⁴³ (*Id.* at 186.) WARF's contention that Apple's

⁴² Because "[a]gency is generally a question of fact," *Van't Rood*, 113 Cal. App. 4th at 562, at a minimum the Court should order a new trial so that the jury can decide this factual issue under the correct vicarious liability standard. *See infra* p. 105.

⁴³ Despite this admission, WARF attempts to justify its counsel's prejudicial comment in his closing argument that Apple "want[ed] to flee the jurisdiction of our laws." (Dkt. 673,

argument was rejected by *Akamai* is also without merit. (*Id.* at 188.) Even assuming that *Akamai*'s standard applies to apparatus claims—which it does not—the court held that standard is not met when the defendant does not “establish[] the manner or timing of [a] performance” “of a step or steps of a patented method.” 797 F.3d at 1023. The fact that [REDACTED]
[REDACTED] demonstrates that Apple does not “establish the manner” of Samsung’s performance.⁴⁴

In the alternative, WARF claims that [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

10/16/2015 Trial Tr. 169:22-170:4 (WARF Rebuttal Damages Closing Statement).) There is no evidence that Apple played any role in determining where Samsung manufactured the A7 chips. WARF contends that its unfounded comment was a justified response to Apple’s argument that Apple was “not liable for infringement because [the] relevant actions were purportedly conducted overseas.” (Dkt. 711 at 186 n.31.) But Apple’s argument is consistent with longstanding U.S. patent law. *See Microsoft*, 550 U.S. at 455 (noting that U.S. patent law “operate[s] only domestically and do[es] not extend to foreign activities” (internal quotation marks omitted)).

⁴⁴ WARF also contends that Apple’s argument would allow defendants to avoid “direct infringement liability by simply remaining silent as to any specific location where the mandated acts must be performed.” (Dkt. 711 at 188.) What WARF fails to understand is that vicarious liability only applies to hold a defendant liable for infringement by a third party. *See, e.g., Cross Med. Prods.*, 424 F.3d at 1311. Therefore, even if a defendant could not be held vicariously liable because it did not control the location of where the infringing acts took place, the patentee could pursue a direct infringement claim against the actual infringing third party.

[REDACTED]
[REDACTED]
[REDACTED] (Dkt. 640-2 at 98:6-8 (McNamara Dep.)).)⁴⁵ Mr. McNamara's testimony is also supported by the fact that Samsung performed initial wafer fabrication in Texas for only about [REDACTED] of the total number of A7 chips that it manufactured. (Dkt. 243 (Lawton Report) at Table 19; PX76.0001.) For the other [REDACTED] of A7 chips, Samsung chose to manufacture them entirely in Korea.

ii. Apple did not control how Samsung manufactured the wafers.

WARF's arguments that Apple controlled how Samsung manufactured the wafers similarly have no merit. Again, the only evidence WARF relies on are the manufacturing contracts between Apple and Samsung. (Dkt. 711 at 181-185.) WARF contends that it has met the "control or direction" standard because the contracts require Samsung to [REDACTED]

[REDACTED]
[REDACTED] (*Id.* at 185.) Yet, this evidence proves nothing more than that [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]. *Cf.* Restatement (Third) of Agency § 1.01 cmt. (f)(1) ("[S]etting standards in an agreement for acceptable service quality does not of itself create a right of control.").

⁴⁵ WARF also argues that the following facts support its position: (1) Apple does its own testing in the United States, and (2) Mr. McNamara was aware that Samsung performed initial wafer fabrication in Texas. (Dkt. 711 at 190.) But neither of those facts comes close to demonstrating that Apple controlled where Samsung chose to manufacture the wafers.

WARF points out that “[p]recisely how Samsung went about manufacturing the A7 chips is ... irrelevant.” (Dkt. 711 at 192.) This statement proves that WARF’s argument is flawed. Under WARF’s broad rationale, any defendant that contracts with a third party to make a device would become vicariously liable for the third party’s infringement even if the defendant did not “control or direct” the third party’s manufacturing process. (*Id.*) WARF’s position would eviscerate the “control or direction” standard entirely. Moreover, WARF fails to recognize that “the power to give interim instructions” distinguishes a party’s “right of control” over another “from a mere contractual” relationship. *Johnson v. Priceline.com, Inc.*, 711 F.3d 271, 278 (2d Cir. 2013); *cf.* Restatement (Third) of Agency § 1.01 cmt. (f)(1) (“The fact that ... an agreement imposes constraints on the service provider does not mean that the service recipient has an interim right to give instructions to the provider.”). Significantly, in this case, [REDACTED], [REDACTED], and, for this additional reason, WARF’s vicarious liability claim fails even under the erroneous “control or direction” standard. *See, e.g., Centillion*, 631 F.3d at 1287 (holding that the defendant was not vicariously liable as a matter of law where it “provide[d] software and technical assistance” but did not control or direct third parties to perform infringing acts).

B. Alternatively, The Court Should Grant A New Trial On WARF’s Vicarious Liability Claim.

In the alternative, Apple requests a new trial on WARF’s vicarious liability claim for three independent reasons: (1) Apple was prejudiced because the claim was tried during the damages phase of trial; (2) the jury instruction on vicarious liability was incorrect; and (3) the jury’s verdict on the claim was against the manifest weight of the evidence.

1. WARF's vicarious liability claim was improperly tried during the damages phase of trial.

As Apple explained in its opening brief (Dkt. 678 at 62-65), the decision to try WARF's vicarious liability claim during the damages phase of trial was prejudicial error because it likely caused the jury to believe that it had already decided that Samsung's wafers infringed the '752 patent during the first phase of trial. In response, WARF contends that there was "no possibility of confusion" by the jury "because the first question in the special verdict form required the jury to determine" whether Samsung's wafers infringed. (Dkt. 711 at 202.) WARF's argument actually supports Apple's point. During the damages phase of trial, the jury was initially instructed that it had already "found that defendant Apple infringed the '752 patent,"⁴⁶ and should not have "any remaining doubt in your minds about Apple's liability." (Dkt. 648 at 1 (Introductory Damages Instructions).) Then, the jury heard testimony regarding both the amount of damages as well as WARF's vicarious liability claim. By the time the jury received the special verdict form, its "Yes" vote on whether Samsung's wafers infringed was predetermined because it was already instructed not to have "any remaining doubt in your minds about Apple's liability."

WARF argues that even if Apple were unfairly prejudiced by the decision to bifurcate infringement liability into separate phases of trial, that prejudice was subject to being cured by a "curative instruction." (Dkt. 711 at 202.) But, in this case, the jury never received a curative

⁴⁶ WARF faults Apple for not raising "any specific objection to the above language before the jury's verdict." (Dkt. 711 at 202.) However, no specific objection to that language was necessary. The prejudicial error did not stem from the Court's instruction that the jury had found infringement, but rather from the decision not to try WARF's vicarious liability claim in the first phase of trial. Apple objected to that decision numerous times. (*See, e.g.*, Dkt. 396 at 70, 73 (Apple's Objections to WARF's Initial Jury Instructions); Dkt. 502 at 1-3 (Apple's Brief ISO Liability Jury Instructions); Dkt. 515 at 1-2 (Apple's Brief ISO Supplemental Liability Jury Instructions); Dkt. 664, 10/05/2015 Trial Tr. 18:11-22:12.)

instruction to explain that, in the first phase of trial, the jury actually had not found that all of the accused products infringed the '752 patent and that the jury should have doubt in their minds as to Apple's liability for Samsung's wafers. The fact that the Court "discussed the Samsung issues at length" in its closing instructions (*id.*) did not cure the prejudicial bifurcation decision, but rather likely increased the jury's confusion as to whether it was deciding only damages in the second phase of trial, as the jury had been originally instructed.

WARF also attempts to distinguish the Seventh Circuit's clear statement cautioning against resolving a defendant's liability during the damages phase of a bifurcated trial. *See Hydrite Chem. Co. v. Calumet Lubricants Co.*, 47 F.3d 887, 890-91 (7th Cir. 1995) (Posner, J.) ("[I]f the trial is divided ... between liability and damages, the fact of injury belongs in the first trial and the quantification of the injury by means of an assessment of damages in the second."). WARF contends that this admonition does not apply in patent infringement cases because courts have permitted the issues of inducement and willfulness to be tried separately from infringement liability. (Dkt. 711 at 206 (citing *Mike's Train House, Inc. v. Broadway Ltd. Imports, LLC*, No. JKB-09-2657, 2011 WL 1045630 (D. Md. Mar. 17, 2011).) WARF's argument is inapposite. In *Mike's Train House*, the court bifurcated inducement and willfulness from infringement to ensure that the defendants were not prejudiced because unlike infringement, "which is a purely objective determination," willfulness and inducement "involve inquiries into Defendants' states of mind." 2011 WL 1045630, at *2. In this case, infringement liability itself was divided into two separate phases, and the jury was asked to decide whether some accused products infringed in the first phase and others—Samsung's wafers—in the second phase. The prejudice here arose from the fact that the jury was asked to decide infringement liability in the damages phase of trial

after the jury had been instructed that it had already found infringement. Such prejudice does not apply when bifurcating inducement or willfulness.⁴⁷

WARF recognizes that the Seventh Circuit has indicated that, when bifurcating between liability and damages, courts should “separate out ‘the fact of injury and the amount of injury (damages)’ in different phases.” (Dkt. 711 at 206 (quoting *Hydrite*, 47 F.3d at 890).) But WARF then argues that infringement as to Samsung’s wafers was a damages issue because “the state of completeness of” the wafers was only a “predicate fact” that the “jury had to consider[] in deciding the quantum of damages.” (Dkt. 711 at 206-207.) WARF is incorrect. As WARF admits, the jury was asked to determine whether the wafers were “reasonably capable of satisfying the claim limitations” of the ’752 patent (*id.* at 156), which was indisputably an infringement issue and a “fact of injury.” *Hydrite*, 47 F.3d at 890. The Court itself rejected WARF’s argument at trial. (Dkt. 664, 10/05/2015 Trial Tr. 18:2-3 (“Technically it’s certainly a liability question with respect to those products.”); *id.* at 22:14-15 (“It’s liability, yes.”).)

Finally, WARF argues that “the Seventh Circuit expressly rejected the central premise of Apple’s argument, that a potential for confusion at the opening of a trial is a basis for reversal.” (Dkt. 711 at 207 (citing *Hydrite*, 47 F.3d at 891).) That argument, too, is without merit. In *Hydrite*, the plaintiff argued that the district court had erred by precluding it from referring to evidence during its opening statement that was later ruled admissible. 47 F.3d at 891-92. The

⁴⁷ WARF also contends that Apple has not shown prejudice because “Apple did not object to willfulness, which is a question of liability, being tried separately from the first phase.” (Dkt. 711 at 205.) But Apple requested that willfulness to be tried separately from infringement liability; it did not request that willfulness be tried together with damages after an initial trial on infringement. As WARF admits (*id.*), Apple requested that the trial be divided into “a first phase directed to liability and damages, and a second phase, if necessary, directed to willfulness.” (Dkt. 338 at 70.) There would have been no prejudice as a result of Apple’s request because infringement liability and damages would have been tried together.

Seventh Circuit held that the district court’s error did not warrant reversal because the plaintiff had not persuaded the court “that preventing [its] lawyer from presenting every facet of his case in his opening statement infect[ed] the trial with prejudicial error.” *Id.* at 892. That situation is much different from the present case. A party’s opening statement, which the jury is instructed is not evidence, is nothing like opening instructions from the court, which the jury is instructed it must follow. Because the jury was likely misled, or at least confused, into believing that it had already decided infringement as to Samsung’s wafers, a new trial on the vicarious liability claim is warranted.

2. The vicarious liability jury instruction was incorrect.

As explained in Apple’s opening brief (Dkt. 678 at 55-58), merely showing “control or direction” is insufficient to establish vicarious liability because a principal-agent relationship is required. The Court should order a new trial because Apple was prejudiced by allowing the jury to hold Apple accountable for Samsung’s actions based on a lower standard than is legally permissible. *See Huff v. Sheahan*, 493 F.3d 893, 899 (7th Cir. 2007).

In support of the “control or direction” standard, WARF relies primarily on the Federal Circuit’s *Akamai* decision. (Dkt. 711 at 207-208.) However, as explained above (*see* pp. 89-90), *Akamai* explicitly rejected WARF’s argument that the “control or direction” standard applies to hold a defendant vicariously liable for infringing an apparatus claim. *See* 797 F.3d at 1022 n.2. Instead, the Federal Circuit has adopted the principal-agent standard for such claims, which is consistent with Supreme Court precedent. *See Meyer*, 537 U.S. at 286; *Cross Med. Prods.*, 424 F.3d at 1311.

3. The verdict on WARF’s vicarious liability claim went against the manifest weight of the evidence.

Finally, Apple requests a new trial because the jury’s verdict on WARF’s vicarious liability claim went against the manifest weight of the evidence. *See Glickenhaus & Co. v. Household Int’l, Inc.*, 787 F.3d 408, 414 (7th Cir. 2015) (“A new trial is appropriate if the jury’s verdict is against the manifest weight of the evidence or if the trial was in some way unfair to the moving party.”). As explained in detail in Section III.A above, the evidence did not support a finding that Samsung’s wafers are capable of infringing the ’752 patent when they leave the United States or that Samsung’s actions were attributable to Apple, and WARF’s arguments to the contrary are without merit.

IV. APPLE IS ENTITLED TO JUDGMENT AS A MATTER OF LAW OR A NEW TRIAL ON DAMAGES.

As Apple’s opening brief demonstrated, WARF presented evidence and testimony in support of its damages theory that tainted the jury’s understanding of the facts, was impermissible under Federal Circuit precedent, and unfairly prejudiced Apple. (*See* Dkt. 678 at 66-100.) In light of the improper admission of this prejudicial evidence, Apple seeks a new trial on damages. WARF also failed to present evidence sufficient to support the full amount of the damages verdict, which further warrants judgment as a matter of law or a new trial on damages.

A. The Patents And Requested Royalty Rates From The Apple-Samsung Litigation Should Have Been Excluded And Cannot Support The Jury’s Damages Award.

The introduction of evidence regarding the patents that Apple asserted in the Samsung litigation and the royalties that Apple *sought* from Samsung in that litigation was improper and so prejudiced Apple that the only cure is to conduct a new trial before a jury untainted by this evidence. (*See* Dkt. 678 at 66-73.) WARF incorrectly alleges that Apple must prove that “the

jury's verdict lacks substantial support without the Apple-Samsung rates" to prevail on this argument. (Dkt. 711 at 215.) That is not the case. Rather, a new trial should be granted upon a showing that "the jury's verdict is against the manifest weight of the evidence or [that] the trial was in some way unfair." *Glickenhaus*, 787 F.3d at 414; *see also* Fed. R. Civ. P. 59. Evidentiary errors are grounds for granting a new trial "if a significant chance exists that they affected the outcome of the trial." *Collins v. Kibort*, 143 F.3d 331, 339 (7th Cir. 1998) (reversing and remanding for new trial on damages where there was "[a] significant chance ... that the jury took the [erroneously-admitted evidence] into account" when calculating damages, and thus the evidentiary error "was not harmless error in the jury's calculation of the damages"); *see also Meyer Intellectual Properties Ltd. v. Bodum, Inc.*, 690 F.3d 1354, 1372 (Fed. Cir. 2012) (applying Seventh Circuit law and finding that evidentiary errors in patent infringement case were prejudicial and warranted a new trial because the court could not say that "the same judgment would have been rendered regardless of the error[s]" (citation omitted)). The record here demonstrates that the admission of evidence regarding the Apple-Samsung litigation was improper and prejudicial to Apple, and warrants a new trial.⁴⁸

⁴⁸ The two cases cited by WARF (Dkt. 711 at 215) to suggest that it need only point to substantial evidence other than the challenged evidence relating to the Apple-Samsung litigation are inapposite. *Passananti v. Cook County*, 689 F.3d 655 (7th Cir. 2012), merely recited the standard for granting JMOL and did not address the admission of improper evidence or the standard for granting a new trial. *See id.* at 659. And *David v. Caterpillar, Inc.*, 324 F.3d 851 (7th Cir. 2003), applied the standard that Apple relies on—in a portion of the quotation that WARF *omits* from its brief using ellipses. *See id.* at 864 (stating that a new trial should be granted "if the improperly admitted evidence had a substantial influence over the jury, and the result reached was inconsistent with substantial justice"). Although the court concluded that a new trial was not warranted given the circumstances of that case, it did not hold that merely pointing to other evidence in the record was sufficient to deny a motion for a new trial. *Id.* (reasoning that "[e]ven if the district court erred in admitting Smith's testimony, we do not believe that the testimony had a 'substantial influence over the jury'").

A patentee may not rely on non-comparable technology and patents to establish damages.

See, e.g., LaserDynamics, Inc. v. Quanta Computer, Inc., 694 F.3d 51, 80-81 (Fed. Cir. 2012) (ordering new trial where damages expert's royalty rate "was untethered from the patented technology at issue" because it relied on licenses that "did not involve the [patent in suit], and no evidence shows that [they] even involve[d] [related technology]"); *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 870 (Fed. Cir. 2010) (overturning royalty where the patentee's expert "used licenses with no relationship to the claimed invention"); *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1329 (Fed. Cir. 2009) (damages award "cannot stand ... when it is doubtful that the technology of [the] license agreements is in any way similar to the technology being litigated here"); see also *Utah Med. Prods., Inc. v. Graphic Controls Corp.*, 350 F.3d 1376, 1385 (Fed. Cir. 2003) (affirming exclusion of expert testimony where party "had not shown that the license agreements used in its expert's analysis were in any way comparable to the" patent-in-suit). Where a patentee relies on licenses to support a proposed reasonable royalty, it has the "burden to prove that the licenses [a]re sufficiently comparable" to the technology and value of the patent in suit. *Lucent*, 580 F.3d at 1329; see also *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1330 (Fed. Cir. 2014) ("[T]he licenses relied on by the patentee in proving damages [must be] sufficiently comparable to the hypothetical license at issue in suit." (internal quotation marks omitted)).

The evidence from the Samsung litigation on which WARP's experts relied fails to satisfy these requirements in all respects. To begin with, WARP failed to establish that the '752 patent—a hardware patent that claims a processor with a data speculation circuit—was comparable to Apple's software-based, user interface patents at issue in the Apple-Samsung litigation. Faced with the clear acknowledgements of its own witnesses that the technology in

this case is different (*see* Dkt. 678 at 70),⁴⁹ WARF claims that Dr. Conte opined that the '752 patent and Apple's patents are technically comparable because the Apple patents are "related to [a] user interface" and "the speed of the CPU, as enhanced by the '752 patented invention, is a feature that has a similarly direct effect on the user experience." (Dkt. 711 at 216.) This strained logic is insufficient to establish technical comparability between the patents under Federal Circuit precedent. *See LaserDynamics*, 694 F.3d at 79 ("When relying on licenses to prove a reasonable royalty, alleging a loose or vague comparability between different technologies or licenses does not suffice."). Tellingly, WARF fails to even address the fact that under Dr. Conte's definition of "comparable," *every* feature enabled by the CPU would be "comparable" to the patent-in-suit. (*See* Dkt. 678 at 72.)

WARF also admits that the fiercely competitive relationship between Apple and Samsung is not comparable to the dynamic between Apple and WARF, a non-practicing entity. (Dkt. 711 at 216-17.) Nonetheless, WARF claims that the market-competitor relationship between Apple and Samsung is somehow neutralized because "Apple sought reasonable royalty damages only for sales as to which it was *not* competing with Samsung." (*Id.* at 217.) That is plainly not the case. In the testimony cited by WARF, Ms. Lawton pointed out only that the requested royalty rate from the Samsung litigation was for a reasonable royalty rather than lost profits damages. (Dkt. 672, 10/16/2015 Trial Tr. 73:3-74:3 (Lawton).) But Apple's competition with Samsung was still a relevant factor in the reasonable royalty requested there. *See Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970) (factor 5: "[t]he

⁴⁹ For example, in defending against Apple's invalidity challenge, WARF argues that the '752 patent's hardware-based circuit was "*completely different*" from software-based techniques for performing data speculation that were known in the prior art. (Dkt. 711 at 143 (arguing that "software-based approaches like Chen's and hardware-based approaches like the '752 patent are in completely different categories"); *see also id.* at 140-146.)

commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business”); *see also* Dkt. 672, 10/16/2015 Trial Tr. 78:2-8 (Lawton) (acknowledging that whether the parties have a competitive relationship is relevant to the hypothetical negotiation). Indeed, by all accounts, the Apple-Samsung competition in the smartphone market is intense; that competition both affects the comparability of the royalty rates sought in the Samsung litigation and precludes their use in this case involving different technology and a non-competitor. The use of the requested royalty rates from the Apple-Samsung litigation was non-comparable under controlling Federal Circuit law, and highly prejudicial to Apple because it inflated the jury’s damages calculus. *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011) (granting a new trial because damages theory that “had no relation to the facts of the case” was “arbitrary, unreliable, and irrelevant”); *ResQNet.com*, 594 F.3d at 869 (“Any evidence unrelated to the claimed invention does not support compensation for infringement but punishes beyond the reach of the statute.”).

Finally, the requested royalty rates from the Apple-Samsung litigation are based on positions taken in an unrelated litigation—compounding their prejudicial effect. Damages figures derived from a litigation position can be and often are based on factors wholly unrelated to the case at bar. *See LaserDynamics*, 694 F.3d at 77 (“The notion that license fees that are tainted by the coercive environment of patent litigation are unsuitable to prove a reasonable royalty is a logical extension of *Georgia-Pacific*.”). For this reason, courts recognize the prejudicial effect of these figures, and the danger of allowing them to be presented to the jury. *See, e.g., Retractable Techs. v. Becton, Dickinson & Co.*, No. 2:07-CV-250, 2009 U.S. Dist. LEXIS 131236, at *7 (E.D. Tex. Oct. 8, 2009) (“[E]vidence of other litigation offered to prove ... the extent of damages should be excluded pursuant to at least Federal Rule of Evidence

403.”). WARF does not dispute that the requested royalty rates its experts relied on from the Apple-Samsung litigation came from arguments made during “prior litigation” and do not come from an “executed license.” (See Dkt. 711 at 218.) Instead, WARF claims that its experts took into account these various differences in their testimony. But, contrary to WARF’s argument, it is neither sufficient nor permissible to introduce non-comparable royalty rates and discuss the reasons why they are not comparable—this non-comparable testimony prejudices the jury, and must be excluded. Failure to do so warrants a new trial. *See Uniloc*, 632 F.3d at 1317 (“To be admissible, expert testimony opining on a reasonable royalty rate must ‘carefully tie proof of damages to the claimed invention’s footprint in the market place.’” (quoting *ResQNet*, 594 F.3d at 869)); *id.* at 1320 (warning against evidence that “cannot help but skew the damages horizon for the jury”).

Perhaps recognizing that it had not sufficiently tied Apple’s patents and requested royalty rates from the Samsung litigation to the ’752 patent and the hypothetical negotiation between the parties here, WARF next claims that it “was not required to prove … *any* comparability” because it “did not rely on the Apple-Samsung rates to prove the extent of damages” but rather to “rebut Apple’s improper royalty stacking arguments.” (Dkt. 711 at 216, 219.)⁵⁰ That claim cannot survive the most cursory review of the record. In his opening and closing statements during the damages phase of trial, WARF’s counsel referred several times to the royalties Apple requested in the Samsung litigation to suggest that the royalty amounts in this case should be commensurate. (Dkt. 670, 10/13/2015 Trial Tr. 25:8-11 (WARF Damages Opening Statement))

⁵⁰ WARF’s assertion that it did not use the requested royalty rates from the Samsung litigation “to value the patented invention” or “to calculate … its damages” (Dkt. 711 at 217 n.34, 219; *see also id.* at 220) is not only wrong, but underscores that this evidence should not have been admitted at trial, since its probative value (if any) regarding damages is substantially outweighed by the prejudice it caused to Apple. *See Fed. R. Evid. 402, 403.*

(“[T]he Apple expert is going to say in contrast to the evidence when they were the patent owner that the value is 5 to 7 cents a chip in contrast to \$2, \$3 or over \$9.”); *id.* at 24:10-28:1; Dkt. 673, 10/16/2015 Trial Tr. 167:10-14 (WARF Rebuttal Damages Closing Statement) (“[T]he claims that Apple made against Samsung in patent litigation ... were for particular features that were somewhat less than \$2.74 and some were higher into the \$3 plus area.”); *id.* at 167:15-25 (stating that “[t]he \$2.74 is reasonable” when compared to the value of Apple’s bounce-back scrolling patent); *see also* Dkt. 678 at 71 (collecting quotations from WARF’s opening and closing statements).) WARF’s opposition brief does not even address these repeated statements from its opening and closing statements. (*See* Dkt. 711 at 215-223.)

Instead, WARF claims that Ms. Lawton used the requested royalty rates from the Apple-Samsung litigation “not to determine WARF’s damages but to rebut Apple’s hypothetical royalty stacking claims.” (Dkt. 711 at 221; *see also* *id.* at 220 (WARF arguing that “[t]he rates Apple requested in the Samsung litigations show that the smartphone industry is not somehow immune to paying multi-dollar royalties for valuable patents and rebut Apple’s claims that damages of more than pennies per patent are *per se* unreasonable”).) But WARF’s counsel expressly told the jury, and Ms. Lawton agreed, that her testimony was being presented “to place the royalty rate that [she] identified as the product of a hypothetical negotiation, the \$2.74 in context in this industry” (even though WARF is not a participant in the smartphone or tablet industry). (Dkt. 671, 10/14/2015 AM Trial Tr. 180:2-10 (Lawton).) Thus, even if WARF’s post hoc explanation for its reliance on the Apple patents to rebut Apple’s royalty stacking arguments were accurate, none of this argument or testimony would have been relevant or proper: WARF used the royalty rates from the Samsung litigation to plant Apple’s requested royalty rates from the Samsung case

in the jury's mind to support the amount of WARF's damages claim here, unfairly prejudicing Apple.

Finally, WARF attempts to distinguish governing and well-established Federal Circuit damages case law, suggesting that cases like *LaserDynamics* and *Uniloc* counsel a different result. However, Apple correctly cited *LaserDynamics* for several propositions. (*See* Dkt. 678 at 67 (licenses to the patented technology are highly probative regarding a reasonable royalty for the patent rights); *id.* at 68 (experts cannot rely on licenses that are only loosely or vaguely comparable); *id.* at 69 (license fees that are tainted by the coercive environment of patent litigation are unsuitable to prove a reasonable royalty).) WARF suggests that Apple's use of *LaserDynamics* to argue that WARF cannot rely on "Apple's litigation position in an unrelated matter" is inapposite because Apple's litigation positions in the Samsung litigation "were based on precisely the same 'voluntary agreement' contemplated by *Georgia-Pacific* that is at issue here." (Dkt. 711 at 222.) But every reasonable royalty claim is based on a hypothetical negotiation. What *LaserDynamics* underscores is that any evidence that has "very little relation to demonstrated economic demand for the patented technology" ought not be admitted. *See* *LaserDynamics*, 694 F.3d at 78.

Uniloc compels the same conclusion. There the Federal Circuit rejected an expert's use of a royalty rate where there was no "basis in fact to associate the royalty rates used in prior licenses to the particular hypothetical negotiation at issue in the case." *Uniloc*, 632 F.3d at 1317. WARF's experts compounded that error. Not only were the rates to which they testified never accepted or awarded, but WARF failed to establish any basis to associate them with the hypothetical negotiation between Apple and WARF.

In sum, WARF has failed to provide any plausible basis for a finding that the Apple-Samsung patents are comparable to the '752 patent. Testimony about those patents and Apple's litigation positions in that case against its direct competitor should not have presented at trial. Because WARF used the royalty rates requested in the Apple-Samsung litigation in an effort to justify its royalty rate in this case, that testimony was not only improper but also highly prejudicial to Apple. A new trial on damages is required. *See Collins*, 143 F.3d at 339; *Meyer*, 690 F.3d at 1372.

B. Ms. Lawton's 50/50 Profit Split Should Have Been Excluded And Cannot Support The Jury's Damages Award.

WARF does not dispute that Ms. Lawton relied on a 50/50 split of Apple's profits to calculate her proposed royalty of \$2.74 per unit. (Dkt. 711 at 224 ("Ms. Lawton concluded that when negotiating over the \$5.48 to \$8.06 in profit per unit generated by the patent, WARF would compromise by agreeing to accept 50% of the low end of the range."); Dkt. 671, 10/14/2015 AM Trial Tr. 106:22-107:2 (Lawton) ("My conclusion was that the parties would negotiate over the range that I've described, the \$5.48 to \$8.06, and that the parties would agree to a reasonable royalty of \$2.74 per unit, which is 50 percent of the low end of the range. So 50 percent of the \$5.48, the low end of the range.").) Instead, WARF claims that Ms. Lawton's analysis was supported by the evidentiary record and was not based on a rule of thumb. (Dkt. 711 at 223-224, 230-232.) The record and established Federal Circuit law are clearly to the contrary. WARF further claims that Apple's motion should be denied because the jury did not award WARF the royalty it requested. However, the jury's effective royalty rate, [REDACTED] per unit, is far higher than any rate supportable by the evidence, demonstrating that the jury's damages horizon was skewed by WARF's improper evidence, and a new trial is required.

1. Ms. Lawton's 50/50 profit split was not sufficiently grounded in the specific facts of this case.

To justify the type of 50/50 profit split advanced by Ms. Lawton, a damages expert must point to record evidence tying the methodology to the specific facts of the case—for example, comparable licenses entered into by the parties where profits were divided on a 50/50 basis. *See, e.g., Robocast, Inc. v. Microsoft Corp.*, 2014 WL 350062, at *3 (D. Del. Jan. 29, 2014) (“If [Defendant] had a history of licensing similar technology for a 50/50 split of the profits, or [Plaintiff] had a history of licensing the [asserted] patent for half of the profits, those would be the sort of facts that would provide a basis for [the expert’s 50/50] calculations.”); *see also Oracle Am., Inc. v. Google, Inc.*, 798 F. Supp. 2d 1111, 1119 (N.D. Cal. 2011) (excluding expert testimony regarding a 50/50 profit split where there was “no anchor for this fifty-percent assumption *in the record of actual transactions.*” (emphasis added)). The only evidence that WARF cites as purportedly tying Ms. Lawton’s 50/50 profit split to the facts of the case are: (1) a conversation Ms. Lawton had with Carl Gulbrandsen regarding WARF’s alleged licensing goals; and (2) the parties’ “relative contributions” to the patented invention. (Dkt. 711 at 225-226.) WARF does not (and cannot) identify a single actual license agreement to demonstrate that this 50/50 profit split was a royalty term that Apple or WARF had previously adopted or successfully negotiated.

WARF claims that Ms. Lawton’s conversation with Dr. Gulbrandsen is sufficient to support Ms. Lawton’s reliance on a 50/50 profit split because it was “evidence of WARF’s *licensing practices.*” (Dkt. 711 at 226.) But this conversation did not involve WARF’s actual “licensing practices” nor was it tied in any way to the specific facts of this case, such as an actual license. First, as WARF acknowledges, Dr. Gulbrandsen stated only that WARF *seeks* 50% of the profits when negotiating a license. (*See id.* at 225 (WARF stating that Ms. Lawton relied on

Dr. Gulbrandsen's statement that "WARF **would have sought** ... 50 to 70 percent of the incremental additional profit" (emphasis added)).) This demonstrates that Ms. Lawton's conclusion was based on WARF's licensing *goals*, not its actual "licensing practices." Second, WARF points to Dr. Gulbrandsen's reference to DX1009, which it calls "a WARF licensing template," and claims that it "represents a public declaration of WARF's expectations when entering into licensing agreements." (Dkt. 711 at 227.) But this template, again, indicates only what WARF seeks, not the actual terms agreed to by any party. Additionally, Dr. Gulbrandsen discussed the template's terms for *sublicenses*, which are not comparable to the non-exclusive license to the '752 patent that WARF and Apple would have agreed to in the hypothetical negotiation. (Dkt. 671, 10/14/2015 AM Trial Tr. 27:22-29:10 (Gulbrandsen); *see* Dkt. 678 at 75.) Third, WARF does not deny that Ms. Lawton failed to analyze any of the "two dozen" WARF agreements that allegedly demonstrate WARF's 50/50 profit split licensing practice. WARF suggests that Ms. Lawton need not have evaluated those agreements because she was not relying on them as support for her ultimate royalty rate but rather as evidence of WARF's "*licensing practices.*" (Dkt. 711 at 226.) But those "two dozen" agreements are not relevant to any profit-split terms here because they all relate to sublicenses (Dkt. 671, 10/14/2015 AM Trial Tr. 28:22-29:10 (Gulbrandsen)), and WARF does not even contend that they involved comparable technology. Indeed, WARF does not dispute Apple's suggestion (Dkt. 678 at 75 n.24) that those "two dozen" sublicenses may relate to WARF's Vitamin D technology, which Ms. Lawton conceded is "not technologically comparable to the '752 patent" (Dkt. 674, 10/14/2015 PM Trial Tr. 52:8-15). Finally, Dr. Gulbrandsen's and Ms. Lawton's testimony regarding WARF's purported "licensing practices" is inconsistent with WARF's actual licensing history. WARF's license to Intel for the '752 patent—the only comparable license agreement admitted into

evidence where WARF was a party— [REDACTED]

[REDACTED]. (See PX464 (WARF-Intel

License).) WARF cannot justify a damages award with a 50/50 split and not provide any support that the licensing practice has ever been implemented or would actually be applied in the instant case.

Ms. Lawton’s reliance on the “parties’ relative development costs” is similarly flawed, and WARF’s opposition does nothing to alter this. (See Dkt. 711 at 228-229.) Dr. Gulbrandsen testified that WARF considers “how much development and investment does the person that we’re providing the license to or the entity we’re providing the license to has to put into the technology to get it commercialized to market.” (Dkt. 671, 10/14/2015 AM Trial Tr. 23:1-13 (Gulbrandsen).) The fact that Apple’s engineers independently designed its LSD Predictor faster than it took Dr. Sohi and his students to arrive at the ’752 patent is not indicative of any value WARF provided to Apple. Nor does it in any way suggest that WARF and Apple would have agreed to a 50/50 profit-sharing royalty structure in the hypothetical negotiation.

Indeed, WARF’s reliance on *Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 33 (Fed. Cir. 2012), in support of its argument that development costs are appropriate to consider in arriving at a reasonable royalty is telling. In *Whitserve*, the Federal Circuit **reversed** a district court’s denial of a motion for new trial on damages where the jury’s damages award “was the result of sheer surmise and conjecture, divorced from proof of economic harm linked to the claimed invention.” *Id.* at 33. *Whitserve*’s discussion of development costs begins and ends with the quotation on which WARF relies in its brief (Dkt. 711 at 229), and certainly does not suggest that development costs may appropriately be considered in every case.

Finally, WARF argues that because the jury awarded WARF a reasonable royalty that was less than Ms. Lawton’s proposed \$2.74 per unit, there is no indication that the jury actually relied on Ms. Lawton’s 50/50 profit split. (Dkt. 711 at 229.) Contrary to WARF’s suggestion, however, Apple’s challenge to the 50/50 profit split is not only a motion to challenge the sufficiency of the evidence underlying the jury’s verdict—it is also a challenge to the erroneous decision to allow this evidence to be introduced in the first place. The fact that the jury granted WARF a lower royalty than Ms. Lawton suggested does not cure the error caused by this improper admission of evidence where it appears the jury was influenced by this evidence, which resulted in granting a royalty that was far greater than any amount supportable by real-world evidence or comparable licenses. Allowing the jury to consider evidence of a 50/50 split as a baseline inappropriately skewed the jury’s view of the appropriate damages in this case, a well-established basis for vacating a damages award. *See, e.g., VirnetX*, 767 F.3d at 1333; *Uniloc*, 632 F.3d at 1320.

2. Ms. Lawton’s 50/50 profit split was an impermissible “rule of thumb” analysis.

WARF does not deny that Ms. Lawton’s analysis closely mirrored the Nash Bargaining Solution, which the Federal Circuit recently rejected as an improper rule of thumb. (Dkt. 711 at 230-232.) Instead, WARF claims that even if Ms. Lawton did improperly rely on a rule of thumb, that does not justify a new trial. (Dkt. 711 at 230 (“When properly applied, that standard can tolerate even explicit reliance on a rule of thumb so long as the remaining evidence presented supports the jury’s verdict.”).) This is not the law.

Nothing about Ms. Lawton’s analysis avoids the Federal Circuit’s recent rejection of the Nash Bargaining Solution. *See VirnetX*, 767 F.3d at 1333 (ordering a new trial on damages where the patentee’s expert relied on the “Nash Bargaining Solution” to start from a 50/50 profit

split). Even where an expert never expressly mentions the Nash Bargaining Solution or game theory, testimony regarding a 50/50 profit split should be excluded where “there is no doubt that the reasoning behind the purported 50/50 profit split is premised on these models.” *Robocast*, 2014 WL 350062, at *3. As discussed above, WARF’s attempts to tie Ms. Lawton’s proposed 50/50 profit split to the facts of this case all fail. There is no comparable license adopting such a split—so whether the 50/50 split is attributed to the Nash Bargaining Solution or Dr. Gulbrandsen’s desires, it is still improper. The Federal Circuit’s rejection of the Nash Bargaining Solution cannot be overcome merely by a self-serving conversation between an expert and a negotiator who expressed his desire that he could potentially achieve a 50/50 split.⁵¹

WARF next claims that even if Ms. Lawton did improperly rely on a rule of thumb—which she did—the remaining evidence supports the jury’s verdict and Apple should not be granted a new trial. (Dkt. 711 at 230-232.) This argument ignores the prejudice Apple suffered by virtue of Ms. Lawton’s improper testimony. *See, e.g., VirnetX*, 767 F.3d at 1333 (noting that “the use of [an initial 50/50 baseline] would nevertheless run the significant risk of inappropriately skewing the jury’s verdict”); *see also Oracle*, 798 F. Supp. 2d at 1119 (noting that a 50/50 profit split is “many times the amount of real-world royalty rates”). To support its position, WARF relies exclusively on *Energy Transportation Group, Inc. v. William Demant Holding A/S*, 697 F.3d 1342 (Fed. Cir. 2012), where the Federal Circuit held that no new trial was justified where the plaintiff’s expert “used the 25 percent rule of thumb in his analysis of a reasonable royalty rate.” *Id.* at 1356-57. WARF’s reliance on *Energy Transportation* is

⁵¹ WARF relies on the fact that Ms. Lawton’s testimony in another case was not excluded as somehow supporting the admission of her testimony here. (Dkt. 711 at 230.) However, WARF does not indicate how Ms. Lawton sufficiently tied the rule of thumb to the facts of that case—and even if she had, whether there were facts sufficient to support that testimony in a different case does not mean there were sufficient facts here.

misplaced, however, as that decision predates the Federal Circuit's definitive decision in *VirnetX* rejecting this particular rule of thumb. In any event, the testimony in *Energy Transportation* was markedly different from this case. There, the Federal Circuit concluded that "ETG's expert provided an entirely separate [from the impermissible rule of thumb] damages analysis that supported the jury's verdict." *Id.*

Ms. Lawton's reliance on the 50/50 profit split, however, permeates every analysis she performed. As WARF's opposition concedes, Ms. Lawton testified as to "three basic methods" for calculating the actual profits Apple makes on the accused products, which resulted (according to her) in a range of \$5.48 to \$8.06. (Dkt. 711 at 231-232.) Ms. Lawton then applied the 50/50 split to the low value of the range, which therefore drove all three of her methods. (See Dkt. 650-9, Lawton Demonstrative 89 (showing use of three models to arrive at \$5.48 to \$8.06 range); *id.* at 92 (showing application of 50/50 split to \$5.48 to \$8.06 range); Dkt. 671, 10/14/2015 AM Trial Tr. 106:22-107:2 (Lawton) ("My conclusion was that the parties would negotiate over the range that I've described, the \$5.48 to \$8.06, and that the parties would agree to a reasonable royalty of \$2.74 per unit, which is 50 percent of the low end of the range. So 50 percent of the \$5.48, the low end of the range.").) Therefore, unlike the expert in *Energy Transportation*, Ms. Lawton did not perform any *separate* analysis that was untainted by the improper application of a rule of thumb. WARF's presentation of this improper testimony requires a new trial.

C. Ms. Lawton's Chip Price Should Have Been Excluded And Cannot Support The Jury's Damages Award.

Before trial, Apple moved to exclude Ms. Lawton's testimony and opinions due to, *inter alia*, her unreliable SoC "valuation." (Dkt. 313 at 16-22.) The Court denied Apple's motion. (Dkt. 468 at 37.) As explained below, however, the unreliability of Ms. Lawton's analysis set

forth in Apple’s motion to exclude was borne out by her testimony at trial. The erroneous admission of her testimony regarding chip price prejudiced Apple and warrants a new trial.

WARF’s claim that even if the Court were to exclude the economic model that used Ms. Lawton’s chip price, “the jury’s verdict would still be supported by the substantial evidence underlying Ms. Lawton’s remaining two models” (Dkt. 711 at 232) is incorrect. Although Ms. Lawton used chip price as a direct input for only one of her models, Ms. Lawton’s overlap range of \$5.48 to \$8.06, which undergirds her entire reasonable royalty calculation, is based on all three economic models. (Dkt. 671, 10/14/2015 AM Trial Tr. 137:2-15 (Lawton); Dkt. 650-9 at 28 (Lawton Demonstrative 40).) Therefore, excluding one economic model would destroy the overlap range and, as a result, the foundation of Ms. Lawton’s reasonable royalty analysis. In other words, Ms. Lawton’s improper testimony regarding chip price valuation tainted her ultimate conclusion regarding reasonable royalty damages.

1. Ms. Lawton ignored all real-world data regarding chip prices.

As Apple explained in its opening brief (Dkt. 678 at 81-83), there is an extensive record demonstrating the real-world price of SoCs. WARF responds that Ms. Lawton did not ignore this real-world data, claiming instead that Ms. Lawton “explained in detail” why she disregarded this evidence. (Dkt. 711 at 233-236.) However, Ms. Lawton’s testimony did little more than summarily reject the real-world evidence in pursuit of her own mobile SoC valuation, demonstrating the unreliability of her valuation.

WARF points to Ms. Lawton’s testimony that allegedly identifies two flaws regarding the “cost-plus” model: “it requires knowing the profit margin Apple makes on its chip; and if an average profit margin is used, it leads to the untenable result that all of Apple’s very different chips would have effectively the same fair market price.” (Dkt. 711 at 234.) With respect to Ms. Lawton’s first point, there is no market profit margin here, just as there is no market value for

Apple's A7 SoC. The measure of damages inherently requires some form of estimation, and it is reasonable to assume the profit margin for a product (Apple's iPhone) is the same as the product's constituent parts (Apple's SoCs). (Dkt. 675, 10/15/2015 PM Trial Tr. 97:11-98:4 (Davis) (applying the profit margin Apple makes on the accused products to the A7 SoC); Dkt. 651-14 at 10 (Davis Demonstrative DDX 16-10).)

Ms. Lawton also was wrong to suggest that it would be improper to use the "cost-plus" model to ascertain average profit margin, even if that meant Apple's successive generation chips have similar effective fair market prices. As Ms. Lawton acknowledged, Apple's "price point has remained relatively constant ... for each of the flagship phones it launched." (Dkt. 674, 10/14/2015 PM Trial Tr. 32:10-22 (Lawton).) The market price of the iPhone 5s (which contains the A7 SoC) when it was first released was the same as the market price of the iPhone 5 (which contains the unaccused A6 SoC) when it was first released. (*Id.* at 32:23-33:7.) It is therefore not unreasonable for the A7 and the A6 to have had similar market values when the A6 was released a full year before the A7, and Ms. Lawton's failure to incorporate these values into her damages analysis demonstrates its lack of reliability and lack of grounding in the actual facts of this case.

Ms. Lawton further rejected a valuation using a "cost-plus" model because Apple's Vice President of Hardware Technologies once criticized the analysis of an intern using a similar model to value Apple's SoCs. In discussing this "cost-plus" model, the Apple executive stated

[REDACTED]

[REDACTED] (Dkt. 671,

10/14/2015 AM Trial Tr. 145:12-146:9 (Lawton) (discussing PX106).) Despite the fact that the "cost-plus-margin" approach is endorsed by Apple's Finance Department (Dkt. 675, 10/15/2015

PM Trial Tr. 147:25-148:13 (Davis); *see also* Dkt. 673, 10/16/2015 Trial Tr. 30:20-31:13 (Davis)), Ms. Lawton relied on this one line from one email of an Apple engineering executive to summarily dismiss and ignore the use of a “cost-plus” model.

Ms. Lawton’s analysis was additionally flawed because she ignored price data for various other chips. WARF contends that Ms. Lawton properly ignored this data because it was “highly limited” and because she could not find “detailed transactions data.” (Dkt. 671, 10/14/2015 AM Trial Tr. 148:15-152:14 (Lawton).) However, as Ms. Lawton acknowledged, some of this price data was for mobile chips that had higher Geekbench scores—a metric that Ms. Lawton used to calculate a reasonable royalty rate—and which could have been used to ground Ms. Lawton’s SoC analysis in real-world data. (Dkt. 674, 10/14/14 PM Trial Tr. 30:10-31:2 (Lawton), discussing Dkt. 243 at Table 6 (Lawton Report).) Ms. Lawton’s disregard of real-world sales data was therefore improper.

2. Ms. Lawton’s use of survey data was improper and biased.

Ms. Lawton’s reliance on Apple customer surveys to calculate the contribution of the A7 to the price difference between the iPhone 5s and iPhone 5c was flawed for at least three reasons.

First, WARF does not dispute that the surveys Ms. Lawton relied on analyze the relative importance of iPhone features to Apple’s customers and do not discuss the monetary value customers would assign these features. (Dkt. 711 at 237-238.) WARF’s only argument for why those surveys can be used to compute prices is that “it logically follows that if the A7 chip was the most important differentiating feature, then it is also the feature that consumers would be willing to pay the most for.” (*Id.* at 238.) WARF points to no legal authority or factual showing to support this position.

Instead, WARF argues that *Apple Inc. v. Motorola, Inc.*, No. 1:11-cv-08540, 2012 WL 1959560 (N.D. Ill. May 22, 2012), did not hold that using a consumer survey, without any other

supporting evidence, to determine the price of a component is an unwarranted assumption that makes an expert's opinion unreliable. (Dkt. 711 at 238-240.) According to WARF, the Federal Circuit "did not criticize reliance on survey evidence more generally; it criticized the unsupported assumptions Apple's expert made in applying that evidence to the facts of that case." (Dkt. 711 at 239.) But, the court *did* criticize the survey in question for just this reason, criticizing the expert's reliance on a customer survey that "had nothing to do with pricing, but rather with helping the company to determine which programs and features are particularly important to cell phone users." *Apple v. Motorola*, 2012 WL 1959560, at *5. That is an apt description of exactly what Ms. Lawton did.

WARF also attempts to bootstrap its use of this evidence by claiming that Apple's Director of Marketing for the iPhone "agreed that the survey evidence Ms. Lawton used would be relevant to this inquiry." (Dkt. 711 at 240.) However, Apple's witness actually testified that the surveys would provide evidence regarding the influence of the A7 processor on "commercial demand." (See Dkt. 671, 10/14/2015 AM Trial Tr. 154:18-155:14 (Lawton) ("Kaiann Drance, Apple's director of iPhone marketing, was asked what factual information she had that would identify the influence of the A7 processor on commercial demand and she identified survey data from early buyers as one of the sources that they do in-house that came to mind.").)

Compounding the error of reliance on "importance studies" in the first place, WARF does not dispute that Ms. Lawton ignored several features in her survey analysis that many Apple customers found important. For example, WARF admits that the weight and thinness of the iPhone 5s and iPhone 5c are not identical; yet Ms. Lawton disregarded these features because, in her opinion, they "would not explain their *difference* in their prices." (Dkt. 711 at 242-243.) WARF provides no legal authority or factual support for Ms. Lawton's opinion that differences

in weight and thinness would not affect prices of Apple's products. In fact, a significant percentage of respondents to Apple's surveys found the iPhone's weight and dimensions important. (Dkt. 674, 10/14/2015 PM Trial Tr. 36:9-37:25 (Lawton) ("Q. And for about 35% of the people surveyed, thinness was important, correct? A. That's correct. Q. And that's lightweight, correct? A. That's part of it. Q. That means the weight, how light it is? A. Yes. Q. And that was not included in your relative weighting either, correct? A. That's correct.").)

Finally, WARF does not respond to Apple's showing that Ms. Lawton's analysis should have been excluded because her valuation was based on only three cherry-picked Apple surveys that had the highest percentage of survey respondents who identified the A7 SoC as an important feature. WARF provides no reason why Ms. Lawton disregarded the other surveys. (Dkt. 711 at 243-244.) WARF claims that the surveys it selected are *qualitative* evidence that "support Ms. Lawton's conclusion that the A7 was important to iPhone 5s purchasers and that a portion of its price premium should be allocated to that chip." (*Id.* at 243.) But Ms. Lawton used these surveys as *quantitative* evidence to value the A7, and her obvious disregard of surveys that would reduce her overstated value of the A7 resulted in an analysis "insufficiently grounded in the specific facts of the case." *VirnetX*, 767 F.3d at 1331.

WARF also cannot dispute that the surveys on which Ms. Lawton relied are based on a sample size that is minuscule relative to the number of accused sales. (Dkt. 711 at 244-245.) WARF contends that "Apple cannot now complain that surveys Apple itself created and relied on in its ordinary course of business are so unreliable as to be cause for a new trial." (*Id.* at 244.) But that is precisely the argument that was rejected in *Apple v. Motorola*, 2012 WL 1959560, at

*5, because it improperly transforms a survey of consumer interest into a basis for the assignment of value.⁵²

Ms. Lawton's testimony regarding the "value" of the SoC demonstrated a fundamental flaw in her methodology. As Apple stated in its motion to exclude Ms. Lawton, "[b]y ignoring real world data that would lower her damages number, making assumptions that are directly contrary to the record, and ignoring inconvenient data from the very surveys she relies on, Ms. Lawton's methodology necessarily produces an inflated SoC valuation." (Dkt. 313 at 22.) Ms. Lawton's testimony unfairly placed unscientific and unsupported damages numbers before the jury, and should not have been admitted. *See Dhillon v. Crown Controls Corp.*, 269 F.3d 865, 869 (7th Cir. 2001) ("Under Federal Rule of Evidence 702 and the principles of *Daubert*, a

⁵² WARF fails to distinguish the case law cited by Apple in its opening brief. WARF alleges that *Mastercard International Inc. v. First National Bank of Omaha, Inc.*, 02-cv-3691, 2004 WL 326708 (S.D.N.Y. Feb. 23, 2004), is distinguishable because, in that case, the survey sample size was 52 compared to 2,157 in Apple's Early Buyer Survey. (Dkt. 711 at 244; DX1870.0019 ("Early Buyer Survey") (showing 2,157 respondents).) However, in *Mastercard*, the court found that the "the number of respondents surveyed [was] too small to provide meaningful results *in this instance*." *Mastercard*, 2004 WL 326708, at *9 (emphasis added). Although the number of respondents surveyed in Apple's Early Buyer Survey is larger than the number of respondents in the *Mastercard* survey, the number of respondents is nevertheless too small compared to the total number of accused products sold [REDACTED] to provide meaningful results. Furthermore, the court in *Mastercard* criticized the proponent of the survey evidence for not citing "any case in which a court has relied solely on a survey of this form with a sample size similar to that presented here." *Id.* at *10. Similarly, WARF does not cite any case approving a survey with a sample size similar to that in Apple's Early Buyer Survey. WARF also criticizes *Caraker v. Sandoz Pharmaceutical Corp.*, 188 F. Supp. 2d 1026 (S.D. Ill. 2001), and *In re Bextra & Celebrex Marketing Sales Practices & Products Liability Litigation*, 524 F. Supp. 2d 1166 (N.D. Cal. 2007), because they related to epidemiological studies rather than consumer surveys. (Dkt. 711 at 244-245.) In both cases, however, the expert testimony was excluded because the expert relied on statistically flawed data to form an opinion. *See Caraker*, 188 F. Supp. 2d at 1030-34 (excluding expert opinion where expert relied on "selective use of statistically insignificant data"); *In re Bextra*, 524 F. Supp. 2d at 1179 (testimony excluded where expert "ignore[d] the vast majority of the evidence in favor of the few studies that support her conclusion"). Ms. Lawton commits the same errors by ignoring other evidence and relying on a survey where the number of respondents represented less than [REDACTED] of the total number of accused products.

district court judge is to act as a ‘gatekeeper’ for expert testimony, only admitting such testimony after receiving satisfactory evidence of its reliability.”). Accordingly, failure to exclude Ms. Lawton’s unreliable and prejudicial testimony warrants a new trial on damages. *See, e.g., Fuesting v. Zimmer, Inc.*, 448 F.3d 936, 942 (7th Cir. 2006) (finding that, after erroneous admission of expert damages testimony, “[t]he appropriate remedy was to remand for a new trial”).

D. Dr. Knittel’s Regression Analysis Should Have Been Excluded And Cannot Support The Jury’s Damages Award.

As explained in Apple’s opening brief, Dr. Knittel’s opinions should have been excluded because they (1) violated the entire market value rule; (2) were biased due to omission of key variables; and (3) produced illogical and widely varying results. (Dkt. 678 at 86-96.) Once again, WARF argues that because Dr. Knittel’s analysis was just one data point used by Ms. Lawton in her damages analysis, his improperly admitted expert testimony does not warrant a new trial. (Dkt. 711 at 245.) But the law is clear that the erroneous admission of prejudicial expert testimony (or other evidence) requires a new trial, absent a demonstration that the error was harmless. *See Fuesting*, 448 F.3d at 942; *see also Estate of Barabin v. AstenJohnson, Inc.*, 740 F.3d 457, 467 (9th Cir. 2014) (“[A]n erroneous admission of expert testimony, absent a showing the error was harmless, requires a new trial.”); *Jerden v. Amstutz*, 460 F.3d 1231, 1241 (9th Cir. 2006) (holding that improper admission of expert testimony constituted reversible error and warranted a new trial); *Elcock v. Kmart Corp.*, 233 F.3d 734, 738 (3d Cir. 2000) (granting a new trial where the testimony of an economics expert should have been excluded because his economic model was not reliable). Indeed, the Seventh Circuit has held that the erroneous admission of expert testimony warrants a new trial in cases, like this one, where it cannot be determined whether the jury relied on that testimony in its verdict. *See Chapman v. Maytag*

Corp., 297 F.3d 682, 688 (7th Cir. 2002) (“The jury returned only a general verdict, so it cannot be determined whether the jury relied on [the expert’s] testimony in apportioning fault. Because we find that [the expert’s] testimony was improperly admitted, a new trial is required.”).

For the reasons set forth in Apple’s opening brief, and as further explained below, the erroneous admission of Dr. Knittel’s testimony prejudiced Apple and warrants a new trial.

1. Dr. Knittel’s regression analysis was legally flawed because it violated the Entire Market Value Rule.

In a case where the parties agreed that the EMVR is not satisfied, Dr. Knittel’s use of the full market prices of the accused smartphones and tablets in his analysis violated the Federal Circuit’s apportionment requirements. WARF argues that an expert’s use of the whole product price as an input is permissible where that price is “properly apportioned down to the ‘market value of the contribution of the asserted patents to the end products.’” (Dkt. 711 at 247 (citing *Ericsson Inc. v. D-Link Sys., Inc.*, No. 6:10-cv-473, 2013 WL 4046225, at *15 (E.D. Tex. Aug. 6, 2013), *damages award vacated by* 773 F.3d 1201 (Fed. Cir. 2014).) Even if that were true, WARF’s claim that “[t]his is precisely what Dr. Knittel has done” is not supported by the record. (Dkt. 711 at 247.)

Dr. Knittel’s analysis failed to properly apportion the contribution of the asserted patent to the value of the entire accused product. As Dr. Knittel admitted, he did not analyze a price premium associated specifically with the technology covered by the ’752 patent. (See Dkt. 670, 10/13/2015 Trial Tr. 272:15-273:1 (Knittel) (“Q. “Did you analyze a price premium associated with the technology covered by the 752 Patent? A. **No**. I analyzed the price premium associated with increases in speed in smartphones and tablets, and that price premium or that value of speed could be applied to any patent that increases speed.” (emphasis added)).) Rather, Dr. Knittel’s analysis attempted to measure the impact of increases in speed generally to the full market prices

of smartphones and tablets, independent from any value specifically associated with the '752 patent. (*See* Dkt. 670, 10/13/2015 Trial Tr. 273:3-13 (Knittel).) Because Dr. Knittel's alleged "apportionment" was not specifically tied to the value of the asserted patent, it was impermissible under Federal Circuit law. *See, e.g., Uniloc*, 632 F.3d at 1317 (expert testimony on damages must "carefully tie proof of damages to the claimed invention's footprint in the market place" (citations omitted)).

From the start, Dr. Knittel skewed the apportionment calculation by beginning the analysis with the price of the product as a whole, as opposed to the smallest saleable unit. As explained in Apple's opening brief, to satisfy the apportionment requirement, Dr. Knittel should have started with the market prices of the agreed-upon smallest saleable units in this case—the SoCs within the accused iPhones and iPads. (Dkt. 678 at 88-89.) *See LaserDynamics*, 694 F.3d at 67 ("The logical and readily available alternative was the smallest salable infringing unit with close relation to the claimed invention[.]"). In response, WARF claims that the data regarding SoC prices presented in Ms. Lawton's Table 6 was not sufficient for Dr. Knittel's purposes. (Dkt. 711 at 247-248.) That argument underscores Apple's point in Section IV.C above that Ms. Lawton used an unreliable SoC valuation as part of her reasonable royalty analysis, but it does not excuse Dr. Knittel's failure to comply with the EMVR.

WARF's attempt to rely on Dr. Hitt's expert report to suggest that Dr. Knittel could not have conducted his analysis using SoC prices as the starting point misrepresents Dr. Hitt's analysis. WARF's claim that Dr. Hitt "could not get statistically significant results" for the impact of SoC speed on price (Dkt. 711 at 248) is wrong. As Dr. Hitt explained, he ran several regressions using Dr. Knittel's model, but starting with the SoC price and benchmark data from Ms. Lawton's Table 6. (Dkt. 273, Hitt Report ¶ 199.) Dr. Hitt did not conclude that there was

insufficient data to conduct the regressions, as WARP suggests, but rather that after completing the regressions successfully, his results showed that there was not a statistically significant link between SoC price and benchmark results. (*Id.*) That is not a concession that Dr. Knittel could not have started with the SoC price—but a demonstration that Dr. Knittel’s entire method did not produce reliable results. Dr. Hitt concluded that “using the same methods WARP’s experts utilize for valuing the accused functionality, benchmarks do not appear to consistently affect SoC prices” (*id.*)—a result directly contrary to what Dr. Knittel concluded.

WARP next points to Dr. Knittel’s “robustness analysis” using subsidized device prices in an attempt to refute the fact that using lower input prices likely would have lowered Dr. Knittel’s ultimate conclusions with respect to the price premium associated with processor speed. (Dkt. 711 at 249.) But Dr. Knittel’s regressions using subsidized prices only serve to underscore the lack of reliability of his models. WARP focuses on the fact that the upper end of the range for the subsidized model was allegedly \$20.26. (*Id.*) However, WARP ignores that the lower end of the subsidized range was \$5.58, *less* than the \$7.09 low-end for his unsubsidized regression analysis, which indicates that a change in input prices could have a downward influence on his results.⁵³

WARP’s argument that Dr. Knittel’s results “would not have meaningfully changed” if he had started with SoC prices rather than smartphone and tablet sales prices (Dkt. 711 at 249-

⁵³ This paradox in the results of the subsidized and unsubsidized analyses merely highlights the unreliability of Dr. Knittel’s models. As pointed out by Dr. Hitt, even in the case of unsubsidized prices, the four baseline regression models employed by Dr. Knittel vary by 50% to 69%, due to only a few variable changes. (Dkt. 675, 10/15/2015 PM Trial Tr. 46:11-23 (Hitt); Dkt. 651-13 (DDX 13-18).) The subsidized price models are even worse, with a variance of up to 400%. (Dkt. 675, 10/15/2015 PM Trial Tr. 47:21-48:23 (Hitt); Dkt. 651-13 (DDX 13-19).) As Dr. Hitt stated, Dr. Knittel’s results “bounce around tremendously” with even small variations in the input data, which evidences their lack of reliability. (Dkt. 675, 10/15/2015 PM Trial Tr. 46:11-23 (Hitt).)

250) is both purely speculative and logically incorrect. First, as explained in Apple’s opening brief and admitted by WARF, Dr. Knittel did not conduct an analysis using the SoC price as the input price. (Dkt. 678 at 88; Dkt. 711 at 247-249.) Accordingly, any assumption that he would have “presented the exact same range of dollar amounts to the jury” (Dkt. 711 at 250) is unsupported conjecture on WARF’s part. Second, WARF is not correct that an increase in the price of the whole device is equivalent to an increase in the price of the relevant component. On the contrary, it is logical to assume that using a lower starting price as an input would yield a lower incremental price associated with the LSD Predictor.

2. Dr. Knittel’s regression analysis was unreliable because it suffered from omitted variable bias.

As explained in Apple’s opening brief, Dr. Knittel’s model is also unreliable because it is subject to an econometric error known as “omitted variable bias” and produced illogical and wildly varying results. (Dkt. 687 at 90-96.) WARF focuses much of its opposition brief on attempting to show that regression analyses have generally been found reliable by the Seventh Circuit. (Dkt. 711 at 250-251.) But the fact that courts generally accept properly conducted and reliable regression analyses does not justify the admission of Dr. Knittel’s testimony in light of the particular flaws in the specific regression models he presented. *Bazemore v. Friday*, 478 U.S. 385 (1986), a case on which WARF relies (Dkt. 711 at 251), makes that clear. There, the Court held only that “absent some other infirmity” a regression analysis “which accounts for the major factors” is not *per se* inadmissible. *Bazemore*, 478 U.S. at 400. The Court also noted, however, that “[t]here may, of course, be some regressions so incomplete as to be inadmissible as irrelevant.” *Id.* at 400 n.10. The wildly varying results that Dr. Knittel produced (e.g., a 50% to 69% variance in his four baseline regression models, and a 400% variance in his subsidized price

models (Dkt. 675, 10/15/2015 PM Trial Tr. 46:11-23, 47:21-48:23 (Hitt)) confirm that his analysis was so incomplete as to be inadmissible.

The Seventh Circuit has also taken care to explain that regression analyses are not admissible merely because regression analysis is itself a generally accepted method. For example, in *ATA Airlines, Inc. v. Federal Express Corp.*, 665 F.3d 882 (7th Cir. 2011), *amended by* 2011 U.S. App. LEXIS 26007, the court found erroneous the admission of expert testimony based on regression analysis where the sole reason for admission provided by the district court was that “regression analysis is an accepted model.” 665 F.3d at 889. The court went on to reject the specific regression analysis performed by the plaintiff’s expert because there were “grave questions concerning the reliability of [the expert’s] application of regression analysis to the facts.” *Id.* The court explained that “[e]ven if we assumed that [the expert’s] model were built on a rational foundation, we would have to reject its results because the model was improperly implemented.” *Id.* at 893. Dr. Knittel’s regression model suffers from just such flaws.

Dr. Knittel’s regression model only directly included 22 of the 138 different potential smartphone and tablet features that he identified. (Dkt. 675, 10/15/2015 PM Trial Tr. 43:8-14 (Hitt); *see also* Dkt. 275-26 (Knittel Report Ex. 14).)⁵⁴ Importantly, Dr. Knittel failed to directly include major factors—including the 64-bit architecture, the graphics processing unit, and the motion co-processor—that were directly correlated with either processor speed or price. (Dkt.

⁵⁴ WARF’s opposition brief incorrectly conflates the number of variables in Dr. Knittel’s regression model with the smartphone and tablet features that Dr. Knittel identified in Exhibit 14 to his report. (*See* Dkt. 711 at 252.) Dr. Knittel did include 65 independent variables in his regression equation, but only 22 of those variables were directly related to the features he identified, with the remaining 43 independent variables representing factors like the time period during which the device was sold or the manufacturer that made the device. Even if WARF’s claim that Dr. Knittel included 65 features were correct, Dr. Knittel still failed to directly include approximately 73 of the smartphone and tablet features he identified in his Exhibit 14.

675, 10/15/2015 PM Trial Tr. 43:15-20 (Hitt).) Failure to directly include these major processor-related features, in combination with the many other flaws in his analysis, renders Dr. Knittel's opinions unreliable and his testimony prejudicial. The admission of Dr. Knittel's flawed analysis over Apple's objection was therefore erroneous and prejudicial to Apple, and warrants a new trial on damages.

3. Dr. Knittel's regression analysis was also unreliable because it produced illogical and varying results.

In addition to the unreliability in his model caused by omitted variable bias, Dr. Knittel's regression model is also unreliable because it produced illogical, counterfactual, and widely varying results. WARF argues that the problems with Dr. Knittel's results identified in Apple's brief "boil[] down to a disagreement between the experts" and that "to the extent this variation raises a question about the weight that should be given Dr. Knittel's results, we are to assume that the jury has already resolved that question in WARF's favor." (Dkt. 711 at 253, 255.) WARF is wrong on both counts.

WARF argues that the counterfactual and illogical results identified by Apple are irrelevant because Dr. Knittel's models were only designed to measure the price impact of processor speed. (Dkt. 711 at 253-254.) First, as Dr. Hitt explained, the non-processor speed values are relevant to understanding the reliability of the models, and in this case the illogical results show that Dr. Knittel's analysis is not reliable. (*See, e.g.*, Dkt. 675, 10/15/2015 PM Trial Tr. 51:12-52:14 (Hitt).) The exact same methodology that Dr. Knittel relied on for his pricing model predicted, counterfactually, that consumers would prefer heavier phones with smaller screens. (*See, e.g.*, Dkt. 675, 10/15/2015 PM Trial Tr. 50:8-15 (Hitt) (increasing screen size decreases price.); *id.* at 51:5-11 (heavier phones are more expensive).) Second, even if WARF were correct that Dr. Knittel's models only need to provide accurate measurements for the

processor speed variable, Dr. Knittel's analysis still produced illogical and counterfactual results. For example, Appendix 7 to Dr. Knittel's report shows a robustness check that he conducted using Effective Clock Speed in Mhz as a measure of processor speed (as opposed to the Geekbench 3 benchmark used in his baseline models):

**ROBUSTNESS CHECK – ALTERNATIVE MEASURE OF SPEED
EFFECTIVE CLOCK SPEED (MHZ)
FOR TABLETS**

Independent Variables	Weighted Apple Specific Effects Price	Unweighted Apple Specific Effects Price	Weighted Uniform Effects Price	Unweighted Uniform Effects Price
Effective Clock Speed (MHz)	45.736*** (6.357)	-26.104*** (6.346)	-9.213 (6.590)	-10.652* (5.671)
Apple Effective Clock Speed (MHz)	672.284***	714.861***		

(Dkt. 275-7 (Knittel Appx. 7).) The first row of Dr. Knittel's Appendix 7 shows the predicted price impact of an increase in processor speed, as measured in Effective Clock Speed, for the industry as a whole. As seen in the excerpt above, in three out of four of Dr. Knittel's models, an increase in processor speed results in a *decrease* in device price (demonstrated by the negative number in the three right-most columns). (*See* Dkt. 670, 10/13/2015 Trial Tr. 282:11-283:4 (Knittel) (admitting that some numbers in the "Effective Clock Speed" row of Appendix 7 were negative).) Thus, Dr. Knittel's own robustness checks show results directly contradicting the results presented to the jury for the single variable that WARP argues Dr. Knittel's analysis was designed to measure accurately.

The difference in results between the first and second rows in Appendix 7 further demonstrates the absurdity of Dr. Knittel's results. As stated above, the first row purportedly shows the impact of processor speed on price for the industry as a whole, while the second row purportedly shows the Apple-specific impact of processor speed on price. In column two, labeled "Unweighted Apple Specific Effects Price," the impact of an increase of processor speed is *negative* 26.104 for the industry, but is a *positive* 714.861 for Apple. It is both illogical and

counterfactual to conclude—as Dr. Knittel’s results suggest—that, for the same increase in processor speed, the average smartphone maker would have to decrease prices by \$26 while Apple could increase prices by \$714. Again, these are results for the one variable—processor speed—that WARF argues Dr. Knittel’s regression models were designed to measure accurately, and yet they still demonstrate the same illogical results that affect the rest of his work. Dr. Knittel’s methodology is therefore unreliable, and his presentation of opinions based on that methodology to the jury was erroneous and prejudicial to Apple.

WARF contends that, to the extent that Dr. Knittel’s illogical or varying results “raise[] a question about the weight that should be given Dr. Knittel’s results, we are to assume that the jury has already resolved that question in WARF’s favor.” (Dkt. 711 at 255.) However, the errors in Dr. Knittel’s analysis do not affect how much weight should be given to his opinions; rather, they render Dr. Knittel’s opinions fundamentally unreliable. Such testimony should not be presented to the jury in the first place. *See, e.g., Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1360 (Fed. Cir. 2008) (“[T]he objective of [Rule 702] is to ensure that expert testimony admitted into evidence is both reliable and relevant.”). The improper admission of Dr. Knittel’s testimony prejudiced Apple and warrants a new trial. *See Fuesting*, 448 F.3d at 942.

WARF’s suggestion that the unreliability in Dr. Knittel’s model could be tested on cross-examination is also incorrect on these facts, because Apple’s cross-examination of Dr. Knittel was restricted. Contrary to WARF’s arguments, the interventions from the Court during the cross-examination went beyond mere trial management and substantively affected Apple’s ability to fully cross-examine Dr. Knittel. (*See, e.g.*, Dkt. 670, 10/13/2015 Trial Tr. 276:14-24, 278:13-21, 280:6-14, 281:7-21, 287:21-25 (Knittel).) Apple’s counsel later explained that he interpreted the Court’s interjections as an indication that the Court wanted the cross-examination

to end, which the Court confirmed by stating that Apple’s counsel was “totally misconstruing a basic regression analysis.” (Dkt. 670, 10/13/2015 Trial Tr. 329:13-332:10.)

E. The Court’s Erroneous Instructions To The Jury Warrant A New Trial On Damages.

The Court’s jury instructions were erroneous and prejudicial to Apple, and therefore warrant a new trial on damages, because the instructions included all fifteen *Georgia-Pacific* factors and did not include Apple’s requested instruction on non-infringing alternatives and switching costs. WARF’s contention that Apple “waived these objections by failing to make them at trial” (Dkt. 711 at 261) misstates the record. Apple requested both of these instructions in its proposed jury instructions filed before trial in August 2015. (See Dkt. 297 (Apple’s Proposed Jury Instructions) at 54-57 (*Georgia-Pacific* factors); *id.* at 62-64 (non-infringing alternatives and switching costs).) Apple reiterated its requests for these instructions during trial, when it filed its brief in support of its proposed modifications to the Court’s jury instructions on damages. (Dkt. 584.) The first page of that brief states: “Apple also objects to the Court’s instruction as unnecessary and potentially confusing because it references all of the *Georgia-Pacific* factors.” (*Id.* at 1.) The second page of that brief states: “Apple proposes that its instructions regarding non-infringing alternatives and switching costs be added to the Court’s instruction on apportionment.” (*Id.* at 2.) When the Court took up the parties’ objections to the proposed jury instructions—including these specific objections made by Apple—the Court overruled Apple’s objections on these two jury instructions. (Dkt. 669, 10/12/2015 Trial Tr. 90:6-24, 104:8-20, 105:5-7.) Apple was not required to re-assert these objections in subsequent briefing concerning other instructions in order to preserve the objections. See, e.g., *Orix Credit Alliance, Inc. v. Taylor Machine Works, Inc.*, 125 F.3d 468, 477-78 (7th Cir. 1997) (finding that the defendant had not waived its argument on appeal regarding jury instructions where the

defendant's counsel had provided proposed instructions and objected on the record to the court's refusal to give its proposed instructions); *see also* Dkt. 668, 10/09/2015 Trial Tr. 160:5-16, 225:21-226:25. Apple's specific objections to these jury instructions were timely made, and WARF's suggestion of waiver is incorrect.

On the merits, WARF argues that the Federal Circuit's decision in *Ericsson Inc. v. D-Link Systems, Inc.*, 773 F.3d 1201 (Fed. Cir. 2014), is limited to cases involving standard-essential patents. (Dkt. 711 at 261.) On the contrary, the Federal Circuit's admonition in *Ericsson* that "courts must consider the facts of record when instructing the jury and should avoid rote reference to any particular damages formula" applies equally to all patent cases, and nothing in the decision suggests the limitation WARF proposes. *Ericsson*, 773 F.3d at 1235 ("In sum, we hold that, *in all cases*, a district court must instruct the jury only on [the *Georgia-Pacific*] factors that are relevant to the specific case at issue." (emphasis added)). Indeed, the Federal Circuit noted as a problem that "courts often parrot all 15 factors to the jury, even if some of those factors clearly are not relevant to the case at hand." *Id.* at 1230; *see also Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1041 (9th Cir. 2015) ("[O]utside the RAND context, the Federal Circuit has recognized that, although 'courts often parrot all 15 factors to the jury,' some of the factors 'clearly are not relevant' to every case." (quoting *Ericsson*, 773 F.3d at 1230) (emphasis added)).

WARF's argument that the damages instructions provided by some courts or included in some model jury instructions list all 15 *Georgia-Pacific* factors likewise fails to demonstrate that the jury should have been instructed on all 15 factors here. (Dkt. 711 at 262.)

First, with regard to model jury instructions, like the AIPLA Model Patent Jury Instructions cited by WARF, it is not surprising that all 15 factors are present. Model

instructions are intended to be just that, templates to cover a wide range of cases, and by their nature as models must later be tailored to the specific facts and issues in any given case. For example, the AIPLA model instructions include model instructions for both Lost Profits and Reasonable Royalty damages, even though only one or the other type of damages is commonly sought in a patent case. (AIPLA Model Patent Jury Instructions, §§ 11.3-9 (Lost Profits), §§ 11.13-21 (Reasonable Royalty).)⁵⁵ The fact that model instructions contain instructions for both measures of damages does not mean, as WARF's argument suggests, that those instructions are mandatory in cases where only one theory is implicated. Nor does the inclusion of all 15 *Georgia-Pacific* factors in model instructions—whether from AIPLA or any other source—mandate that all patent juries must be instructed as to all the factors. Rather, the law is clear that courts should tailor the *Georgia-Pacific* instruction—like any other instruction—to the facts of a case and only instruct the jury on issues relevant to the record. *See, e.g., Humphrey v. Staszak*, 148 F.3d 719, 723 (7th Cir. 1998) (holding jury instruction was “improper and misleading” where “it was irrelevant to the [legal] inquiry” at issue in the case); *Rosenburg v. Lincoln Am. Life Ins. Co.*, 883 F.2d 1328, 1337 (7th Cir. 1989) (holding that “instruction was rightly rejected” because it “is irrelevant and could have misled the jury”); *United States v. Martin*, 507 F.2d 428, 430 (7th Cir. 1974) (granting new trial where the “jurors were entitled to assume that they were not given irrelevant instructions”).

Second, the fact that an instruction on all 15 *Georgia-Pacific* factors may have been relevant in other cases is beside the point because, on the specific record in this case, there was no testimony on a number of the factors. WARF's reliance on *Energy Transp. Group, Inc. v. William Demant Holding A/S*, 697 F.3d 1342 (Fed. Cir. 2012), is misplaced. Nowhere in that

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See <http://www.aipla.org/learningcenter/library/books/other-pubs/Pages/default.aspx>.

case did the Federal Circuit address jury instructions on all, or less than all, of the *Georgia-Pacific* factors. Instead, the court simply restated the general premise that testimony on the *Georgia-Pacific* factors can be admissible evidence. *Id.* at 1357 (“Once again, this court does not endorse *Georgia-Pacific* as setting forth a test for royalty calculations, but only as a list of admissible factors informing a reliable economic analysis.”). WARF’s citation to this Court’s prior instructions in *Ameritox, Inc. v. Millennium Health, LLC*, No. 13-832-WMC, Dkt. 427 (W.D. Wis. Apr. 21, 2015), is likewise inapplicable here. Whether instruction on all the *Georgia-Pacific* factors may have been relevant to the *Ameritox* case has no bearing on the appropriateness of instructing the jury on all 15 factors here, where there was no testimony regarding a number of the factors.

WARF argues that Ms. Lawton’s one slide and one substantive answer regarding that slide is sufficient to warrant an instruction on all 15 *Georgia-Pacific* factors. (Dkt. 711 at 263 (“[R]ather than march through all fifteen factors, Ms. Lawton presented the evidence first and then explained how the evidence fit into the *Georgia-Pacific* framework in a summary fashion.”).) WARF fails to cite any testimony from Ms. Lawton mapping the “underlying evidence” to each of the *Georgia-Pacific* factors. The reason for that is simple: Ms. Lawton never provided such an explanation or such testimony to the jury. As set forth in Apple’s opening brief, there was simply no testimony regarding many of the *Georgia-Pacific* factors, including Factors 3, 4, and 6-14. (Dkt. 678 at 96-97.) Accordingly, it was error for the Court to include the missing factors in the reasonable royalty instruction, and the inclusion of extraneous and irrelevant *Georgia-Pacific* factors likely confused and misled the jury, resulting in prejudice to Apple. *See Martin*, 507 F.2d at 430 (reversing due to the likelihood of jury confusion where

the jury was given an irrelevant instruction because “[t]he jurors were entitled to assume that they were not given irrelevant instructions”).

With regard to Apple’s request for a separate instruction on non-infringing alternatives and switching costs, WARF argues that “the jury was instructed on their relevance in the Court’s introductory jury instructions on damages.” (Dkt. 711 at 264.) But the inclusion of the phrase “non-infringing alternatives” among a laundry list of other factors, without any explanation as to what a non-infringing alternative is or how it might affect the damages analysis, does not constitute having “the jury … instructed on the[] relevance” of these alternatives. WARF admits that “the jury heard evidence from both parties on the availability of noninfringing alternatives and their potential relevance to damages.” (Dkt. 711 at 264.) That is why a specific instruction on non-infringing alternatives was warranted, and the failure to so instruct the jury was prejudicial to Apple. *See, e.g., Wordtech Systems Inc. v. Integrated Network Solutions, Inc.*, 609 F.3d 1308, 1314-15 (Fed. Cir. 2010) (finding that a district court had committed “plain error” by failing to instruct the jury regarding a defense that would have reduced a defendant’s liability). Similarly, as to switching costs, although WARF claims that there was no evidence of switching costs (Dkt. 711 at 264), the jury heard testimony from WARF’s experts that it would have been costly for Apple to implement a design alternative (*see, e.g.*, Dkt. 670, 10/13/2015 Trial Tr. 299:4-300:25 (Johnson)), and Apple’s rejected instruction would have reminded the jury that such costs could not be considered when determining the incremental value contributed by the claimed invention.

Finally, WARF’s criticism of Apple’s cited cases is misplaced. In *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1372-73 (Fed. Cir. 2008), the district court had reduced the jury’s royalty rate to account for non-infringing alternatives—showing the relevance of those

alternatives to the damages calculus. And WARF acknowledges that *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1571-73 (Fed. Cir. 1996), remanded for reconsideration of the royalty rate to account for the availability of a non-infringing alternative—again, showing the relevance of this factor to damages. *See NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1311 (Fed. Cir. 2005) (“A jury verdict will be set aside, based on erroneous jury instructions, if the party seeking to set aside the verdict can establish that those instructions were legally erroneous, and that the errors had prejudicial effect.”).

F. The Jury’s Damages Verdict Was Not Supported By Substantial Evidence And Went Against The Manifest Weight Of The Evidence.

As explained in Apple’s opening brief, Apple seeks a new trial on damages because the jury’s award went against the manifest weight of the evidence and because WARF failed to present sufficient, reliable evidence from which a reasonable jury could award reasonable royalty damages in the amount of \$234 million, or [REDACTED] per unit. (See Dkt. 678 at 98-100.) WARF argues that Apple’s motion with respect to damages should be denied because the jury’s award was supported by substantial, unchallenged evidence. (Dkt. 711 at 211-215.) But that is not the test. A “new trial is appropriate if the jury’s verdict is against the manifest weight of the evidence or if the trial was in some way unfair to the moving party.” *Glickenhaus*, 787 F.3d at 414. And when evidentiary errors allow evidence or testimony to be improperly presented to the jury, a new trial on damages is required if there was “[a] significant chance ... that the jury took the [erroneously-admitted evidence] into account” when calculating damages, and thus the evidentiary error “was not harmless error in the jury’s calculation of damages.” *Collins*, 143 F.3d at 339; *see also Meyer Intellectual Props.*, 690 F.3d at 1372 (applying Seventh Circuit law and concluding that evidentiary errors in patent infringement case were prejudicial and warranted a new trial because the court could not say that “the same judgment would have been rendered

regardless of the error[s]" (citation omitted)); *Fuesting*, 448 F.3d at 940-42 (remanding for a new trial due to "prejudicial evidentiary error" in the admission of expert testimony); *Elcock*, 233 F.3d at 754-58 (granting new trial where expert's "economic damages model ... relied on several empirical assumptions that were not supported by the record").

Moreover, although WARF claims that "[t]he full evidentiary record clearly supports the jury's verdict" (Dkt. 711 at 266), it does not. The record evidence does not support the full extent of damages awarded by the jury—whether viewed alone, or especially when viewed in light of the prejudicial evidence that should have been excluded from trial, as discussed above. The damages award should be vacated, and JMOL or a new trial on damages granted.

1. The only evidence comparable to the hypothetical license that WARF and Apple would have negotiated demonstrates that the jury's damages award was against the manifest weight of the evidence.

WARF presented no evidence of any comparable license that affirmatively supports the jury's award of \$234 million. Notwithstanding that WARF has 1600 license agreements, neither Ms. Lawton, nor anyone else on behalf of WARF, identified a comparable license that comes close to supporting either Ms. Lawton's \$2.74 per unit rate, or the jury's \$234 million award. As set forth in Apple's opening brief, every single license in the record—both WARF's and Apple's—is for an amount substantially less than \$234 million, with all but one being [REDACTED]

[REDACTED]. (Dkt. 678 at 99-100.) WARF's own internal analysis of the value of the '752 patent is also substantially less than the [REDACTED] per unit jury rate. Accordingly, the manifest weight of the evidence shows that the damages amount awarded by the jury far exceeds the maximum damages amount supported by the evidence for a license to a single patent covering a single feature in a microprocessor.

a. The 2009 WARF-Intel license

WARF cannot dispute that the only existing license to the '752 patent, WARF's 2009 agreement with Intel (PX464), is technologically the most comparable agreement in the record. Even WARF's licensing expert admitted that the Intel agreement is "highly ... comparable" in terms of the licensed technology. (Dkt. 673, 10/16/2015 Trial Tr. 50:2-4 (Chandler) ("Q. Right. It's highly comparable technologically; correct? A. Technologically, yes.").) Nor does WARF dispute that the effective royalty rate that Intel paid WARF for a license to the '752 patent was [REDACTED] per unit—a far cry from the jury's award of [REDACTED] per unit. (Dkt. 675, 10/15/2015 PM Trial Tr. 83:21-84:24 (Davis).)⁵⁶ Instead, WARF claims that, in the context of the hypothetical negotiation, Apple would have paid significantly more than Intel for a license to the '752 patent. (Dkt. 711 at 266-269.) WARF's arguments for multiplying the Intel rate are not supportable but, even if accepted, cannot justify the enormous increase from the rate Intel paid for a license to the '752 patent to the rate awarded by the jury here.

First, WARF argues that Intel removed the accused feature from its products, thereby demonstrating that the '752 patent was less valuable to Intel than to Apple. (Dkt. 711 at 268-269.) At trial, however, WARF acknowledged that Intel *did not* remove the feature and continued to sell processors that incorporated the accused functionality. For example, Mr. Chandler admitted that the license granted Intel an unrestricted license to practice the '752 patent both retroactively and prospectively. (Dkt. 673, 10/16/2015 Trial Tr. 54:3-10 (Chandler) ("Q. So in this license agreement with the advice of the lawyers, WARF granted a backward and forward license; correct? A. That's correct. Q. And as a result, Intel had the right to sell

⁵⁶ Even if Intel had removed the accused feature from its processors, that would still amount to an effective royalty of [REDACTED] per unit paid by Intel for the '752 patent—still significantly less than what the jury awarded against Apple here. (Dkt. 675, 10/15/2015 PM Trial Tr. 85:24-86:3 (Davis).)

products with memory disambiguation after the date of the license; correct? A. That would seem to be correct.”). There is no suggestion in the license itself that Intel agreed to stop using the accused technology or remove the accused feature from its future processors. Intel’s corporate witness testified—without contradiction—that Intel sold more than [REDACTED] processors with the accused feature after the license agreement. (*See, e.g.*, Dkt. 231, Papworth Dep. 65:16-65:24 (“Q. Was there ever a time when the memory disambiguation feature in any of the products listed in Exhibit 5 was removed or disabled? A. No. Q. So the grand total of [REDACTED] processors shown at the bottom right of page 3 of Exhibit 5, all of those net billing units were of processors that supported memory disambiguation. Correct? A. Yes.”)⁵⁷; DX1630, DX1631 (spreadsheets showing relevant Intel sales); *see also* Dkt. 675, 10/15/2015 PM Trial Tr. 86:8-11 (Davis) (“Q. And that’s if [Intel] hadn’t used [the infringing feature] anymore, right? A. That’s right. But we know for sure that [Intel was] continuing to use [the infringing feature] in the products that were accused and it continued to be sold afterwards.”); Dkt. 672, 10/15/2015 AM Trial Tr. 131:15-18 (August) (“Q. Now, sometime after that Intel turned back on the memory disambiguation feature; correct? That’s your testimony? A. That’s my understanding.”).) WARF’s technical expert Dr. Conte also admitted that Intel did not remove the memory disambiguation feature after the date of the 2009 agreement. (Dkt. 670, 10/13/2015 Trial Tr. 143:23-144:3 (Conte) (“Q. And it’s true because Intel did turn the memory disambiguation feature back on following 2009; right, sir? A. Actually I believe David Papworth said recently. I don’t know the time frame, but yes, they did turn it back on.”).) And during the liability phase of trial, WARF’s counsel and expert told the jury that Intel needed the technology in its processors. (*See, e.g.*, Dkt. 664, 10/05/2015 Trial Tr. 185:20-186:10 (WARF Liability

⁵⁷ Mr. Papworth’s videotaped deposition was shown at trial. (*See* Dkt. 672, 10/15/2015 AM Trial Tr. 22:10; *see also* Dkt. 624-4, Clip Report at 3.)

Opening Statement) (claiming that the Intel license is evidence showing praise of the '752 patent); Dkt. 669, 10/12/2015 Trial Tr. 75:20-25 (WARF Liability Closing Rebuttal) (claiming that Intel needed to take a license in 2009); Dkt. 667, 10/08/2015 Trial Tr. 321:5-322:3 (Mudge).) Accordingly, WARF's argument that Intel's removal of the accused functionality is evidence that the '752 patent was less valuable to Intel than to Apple is without merit.

Second, WARF contends that WARF granted a license to Intel at a lower price than it otherwise would have due to Intel's history with the University of Wisconsin. (Dkt. 711 at 212-213, 267.) However, Dr. Gulbrandsen's self-serving statement on this point is directly contradicted by record evidence showing that, rather than viewing the license as a "discount," Intel was not pleased with the price it paid for the 2009 license. (Dkt. 675, 10/15/2015 PM Trial Tr. 77:15-78:21 (Davis) (explaining that Mr. Cagan, an officer at WARF, claimed that Intel was "upset" at having to pay \$110 million for the '752 patent); *id.* at 78:22-79:2 (stating that "paying \$110 million doesn't seem like an exercise in repairing relations").) WARF also claims that Apple would pay more for a license to the '752 patent than Intel did because, with respect to the Intel license, "WARF wanted to avoid the expense and risks of litigation." (Dkt. 711 at 212-213.) However, as Mr. Chandler testified, the settlement occurred "just prior to coming to trial" and there is no indication that WARF avoiding significant additional litigation expenses by entering into the settlement with Intel. (Dkt. 673, 10/16/2015 Trial Tr. 46:17-19 (Chandler).)

Third, WARF claims that Apple achieved "at least 10x more speed from the patent" than Intel did. (Dkt. 711 at 212.) As WARF's expert Dr. Conte acknowledged, however, WARF's "10x" calculation is based on the performance benefit that **Intel** calculated in the Intel litigation versus the performance benefit **WARF** calculated in the Apple litigation. (Dkt. 670, 10/13/2015 Trial Tr. 156:12-158:11 (Conte).) WARF also mischaracterizes Dr. August's testimony to

suggest that Intel received less of a benefit from the '752 patent than Apple allegedly does. Dr. August never testified that "Apple's performance gain is at least 32 times Intel's." (Dkt. 711 at 268.) Rather, Dr. August testified that there were a number of benchmarks (including Basemark, Linpack, and 3DMark) where the performance benefit associated with the accused LSD Predictor was between -0.51% and 4.41%. (Dkt. 672, 10/15/2015 AM Trial Tr. 66:2-68:7 (August); Dkt. 651-11 at DDX 11-21.) Dr. August further testified that the results of his testing of real-world applications showed the performance benefit to Apple ranged from 0.25% to 4.45%. (Dkt. 672, 10/15/2015 AM Trial Tr. 74:20-23 (August) ("Q. ...Taken together, what was the performance difference attributable to the LSD predictor in your user applications tests? A. It was less than 1 percent."); Dkt. 651-11 at DDX 11-22.) Ultimately, Dr. August concluded that Apple received an approximately 1-3% performance benefit associated with the LSD Predictor.⁵⁸ (*Id.* at 99:2-6; *see also* Dkt. 651-11 at DDX 11-34.) Rather than showing a substantial increase in the benefit to Apple, Dr. August concluded that the performance benefit to Apple was within approximately the same range he calculated for Intel in the prior litigation. (Dkt. 672, 10/15/2015 AM Trial Tr. 99:7-10 (August) ("Q. So in your opinion, is the range that Apple is in about the same as the range that -- at least overlapping with the range that Intel was in? A. Yes. It's at least overlapping."); *see also* Dkt. 651-11 at DDX 11-34.)

The record further shows that WARF's own expert in the Intel litigation, Dr. Stone, opined that the maximum benefit of the accused functionality to Intel was 40%—much higher than the 8.55% gain WARF claims Apple received. (Dkt. 675, 10/15/2015 PM Trial Tr. 11:3-9

⁵⁸ Dr. August's conclusions are also supported by the testimony of Mr. Williams, the Apple engineer who helped develop the accused SoCs. (Dkt. 672, 10/15/2015 AM Trial Tr. 15:8-14 (Williams) ("Q. Mr. Williams, yesterday you recall talking about an estimate of the performance benefit of the LSD predictor that you'd given? A. Yes, I remember. Q. That was your estimate of in the range of 2 to 3 percent? A. That's correct.").)

(August) (“Q. And on page 11, what was Dr. Stone’s analysis of the maximum performance gain that Intel received? A. Well, he’s saying – he’s looking at an Intel study that showed that the maximum improvement due to memory disambiguation was 40%. Q. How much? A. 40%.”); *see also id.* at 12:2-6 (“Q. ...So the question is, what does WARP’s expert, Dr. Stone, say about Intel’s performance immediately under this performance table? A. He’s saying that it shows a maximum improvement of 40%.”). Even using the lower range of 20-25% advanced by WARP in the Intel litigation, the performance benefit to Intel was double what it is for Apple. (Dkt. 672, 10/15/2015 AM Trial Tr. 98:21-23 (August) (“Q. So Intel, according to WARP’s numbers, received something like more than double the benefit? A. Looks like up to more than double.”); *see also* Dkt. 651-11 at DDX 11-34.)

Fourth, WARP argues that the ’752 patent was more important to Intel because “Intel faced less competition” when it entered the license agreement. (Dkt. 711 at 212.) But the record demonstrates that the ’752 patent would be much more valuable to a company like Intel, whose business focuses on selling microprocessors, than to a company like Apple that sells end-user devices like smartphones and tablets. (Dkt. 672, 10/15/2015 AM Trial Tr. 99:11-100:15 (August).) Dr. Colwell testified, for example, that the ’752 patent was more important to Intel than Apple because Intel’s main product line is server processors, which are memory intensive and therefore benefit more from the ’752 patent than Apple’s accused processors. (Dkt. 674, 10/14/2015 PM Trial Tr. 101:13-104:1 (Colwell) (“I think the fact that Intel is so heavily dependent now in the server space means that this ’752 boost for performance in the memory interface is more important to them.”).) This testimony is borne out by the fact that WARP’s experts in the Intel litigation estimated that Intel enjoyed a performance benefit more than twice the performance benefit WARP’s experts estimate for Apple in the current litigation. (Dkt. 672,

10/15/2015 AM Trial Tr. 94:11-99:10 (August).) Dr. August further testified that the '752 patent was more important to Intel because, as a processor manufacturer, Intel's only source of performance enhancements came from processor improvements while a company like Apple, which makes end-user products, could achieve performance enhancements from other sources, such as software. (*Id.* at 99:11-100:16.) Finally, Ms. Davis testified that a license to the '752 patent would be more important to Intel than to Apple because: (1) Intel actively marketed the accused feature while Apple did not; (2) WARF estimated that Intel enjoyed as high as a 40% performance increase from the accused feature; and (3) a patent covering processor technology will be more important to a processor company like Intel than to a company focused on end-user products like Apple. (Dkt. 675, 10/15/2015 PM Trial Tr. 86:16-92:6 (Davis).)

b. The comparable Apple license agreements

WARF also takes issue with Apple's reference to five comparable patent license agreements entered into by Apple, each with total royalty payments substantially lower than the jury's \$234 million award. (Dkt. 711 at 269-270.) Nowhere in its opposition brief does WARF dispute the technical comparability of any of the five Apple licenses. Instead, WARF points to a short list of alleged "economic" differences between the five Apple licenses and the hypothetical license for the '752 patent, without any explanation as to why those differences render the licenses noncomparable. Mr. Chandler did not dispute the technological comparability of these five licenses at trial, and admitted that under these agreements Apple paid between [REDACTED]

[REDACTED] for anywhere between [REDACTED], and that in most cases the parties to the license were not competitors. (Dkt. 673, 10/16/2015 Trial Tr. 55:6-58:25 (Chandler).) Given these comparable licenses, the jury's award of \$234 million for a single patent goes against the manifest weight of the evidence.

c. The Apple-ARM agreement

WARF likewise argues that the agreement between Apple and ARM—an agreement granting Apple [REDACTED]

[REDACTED]—is not relevant to the calculation of damages in this case. (Dkt. 711 at 270-271.) In particular, WARF argues that there was no evidence that Apple actually uses the technology licensed under the ARM agreement. (*Id.* at 271.) WARF's argument is directly contradicted by the record evidence: both Mr. Williams and Dr. Colwell testified that Apple uses the technology it licenses from ARM. (*See, e.g.*, Dkt. 671, 10/14/2015 PM Trial Tr. 139:13-20 (Williams) (“And [the ARM] instruction set obviously is a critical thing. And that’s kind of built into the 64-bit architecture. There’s kind of an implied instruction set that you want to support in the processor. And when we first designed Cyclone, there were actually three: there’s the ARM instruction set that you heard a little bit about today, Thumb, and actually the V8 instruction set itself called OBON (ph.”); Dkt. 671, 10/14/2015 PM Trial Tr. 111:2-6 (Colwell) (“In terms of -- the reason I like to look at the ARM license as an umbrella is because if you’re under that umbrella and you have a license, you can actually design an actual chip, which Apple did and put it out in the real world.”).) WARF’s expert, Ms. Lawton, agreed:

Q. Apart from what the technical experts have told you, do you know whether the Apple iPhones and iPads include ARM technology?

A. *My understanding is that the ARM architecture is the basis upon which Apple builds its chip architecture.*

Q. The iPhone and the iPad actually have ARM technology in them, correct?

A. I leave that to the technical experts, but that’s my general understanding.

(Dkt. 674, 10/14/2015 PM Trial Tr. 20:19-21:2 (Lawton) (emphasis added).) It strains credulity to argue, as WARF does, that an agreement under which Apple licenses the technology used by

Apple to make the very processors accused of infringement has no bearing on the appropriate measure of damages in this case—much less that it is worth only [REDACTED] of WARF’s single patent.

d. WARF’s own pre-litigation valuation of the ’752 patent

WARF’s attempt to downplay its own pre-litigation analysis of the value of the ’752 patent is likewise unavailing. WARF dismisses Ms. Sifri’s 2006 “WARF Market Analysis Report” (DX1677) as merely a “sensitivity analysis” or “training exercise,” arguing that it has no relevance to the damages issues here. (Dkt. 711 at 272-273.) Regardless of how WARF now tries to characterize this document, Ms. Sifri was a WARF employee who attempted to determine the appropriate dollar amount for a license to the ’752 patent, and the results of her work—as set forth in DX1677—constitute the only time WARF has ever attempted to value the ’752 patent outside of litigation. (Dkt. 675, 10/15/2015 PM Trial Tr. 91:14-16 (Davis); Dkt. 671, 10/14/2015 AM Trial Tr. 47:7-16 (Gulbrandsen).) The fact that the per-unit rate actually paid by Intel was *exactly* within the range of proposed per-unit rates in Ms. Sifri’s presentation demonstrates the accuracy and relevance of her analysis.

2. The other evidence that WARF points to does not support the full amount of the jury’s damages award.

Unable to identify any comparable license agreement that would justify the damages awarded in this case, WARF points to a handful of other evidence. But this evidence, too, does not come close to supporting the full amount of the jury’s damages award.

For example, WARF suggests that “Apple’s own evidence of [REDACTED] [REDACTED] per unit attributable only to the ’752 patent” supports the jury’s [REDACTED] per unit award. (Dkt. 711 at 211.) That is plainly not the case, as Ms. Davis set forth her analysis regarding [REDACTED], and then applied a reasonable royalty rate to calculate a per unit royalty of [REDACTED] which is [REDACTED] less than the

jury's royalty award. (Dkt. 675, 2015/10/15 PM Trial Tr. 131:23-132:3 (Davis) ("Q. Now, you did a calculation where you determine that [REDACTED]

[REDACTED] correct? ... A. ... That is correct, yes." (emphasis added))).

Ms. Davis never testified that [REDACTED]

[REDACTED]. Even assuming Ms. Davis's [REDACTED], that still would not support the jury's award of [REDACTED]. Other than Ms. Lawton's improper 50/50 profit split, there is no evidence in the record regarding how the parties should allocate any profits that might be linked to the '752 patent, and therefore there is no evidence that would allow the jury to derive [REDACTED] per unit from the dollar range presented by Ms. Davis. WARF cites no evidence that the "incremental profit per unit attributable only to the '752 patent," without more, supports the jury's per unit award.

WARF also alleges that "significant performance benefits Apple achieved through its use of the '752 patent" support the jury verdict. WARF first states that Apple's LSD Predictor "creates an 8.55% speed improvement on Geekbench over noninfringement mode 3." (Dkt. 711 at 213.) However, as stated above, when comparing the performance benefit that **WARF** calculated in the Intel litigation versus the performance benefit that **WARF** calculated in the Apple litigation, Intel achieved more than twice the speed performance than Apple did from the '752 patent. *See supra* pp. 142-147. WARF's reliance on performance improvements therefore cannot support a royalty rate [REDACTED] greater than the effective per unit royalty rate from the 2009 Intel license. WARF's remaining "evidence" regarding the "significant performance benefits" to Apple are simply qualitative statements made by Apple or WARF's experts that are not linked to a quantitative value of the accused functionality or the '752 patent. This evidence is insufficient to support the extent of the jury's damages award. *See*

Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., Inc., No. 2015-1066, 2015 WL 7783669, at *5 (Fed. Cir. Dec. 3, 2015) (“[Q]ualitative testimony that an invention is valuable—without being anchored to a quantitative market valuation—are insufficiently reliable.”).

WARF similarly argues that the “critical energy-saving benefits created by the ’752 patent” and the “economic importance of the invention to Apple” are evidence of the value of the ’752 patent to Apple. (Dkt. 711 at 214-215.) As an initial matter, WARF’s calculation of energy-savings due to the LSD Predictor is fundamentally flawed—WARF’s analysis used a “workload that’s [not] representative of what anyone is going to do with their phone” and a battery that is “the order of five times larger than it actually is.” (Dkt. 672, 10/15/2015 AM Trial Tr. 100:17-107:16 (August).) Dr. August estimated that under more realistic conditions the LSD Predictor would create a power savings of “less than a minute over the course of ten hours.” (*Id.* at 107:1-2.) As for the remainder of the evidence WARF cites, this evidence is once again strictly qualitative in nature and does not suggest that any quantifiable royalty rate, let alone the jury’s effective rate of [REDACTED] per unit, is proper. *See Commonwealth Sci. & Indus. Research Organization*, 2015 WL 7783669, at *5. As a result, none of the evidence WARF cites regarding supposed “critical energy-saving benefits” or “economic importance of the invention to Apple” actually supports the per-unit rate arrived at by the jury.

Ultimately, the record is devoid of evidence supporting damages at the rate awarded by the jury. This is especially true when considered in light of the improper admission of evidence that prejudiced Apple by suggesting inflated damages numbers to the jury. Accordingly, JMOL or a new trial on damages should be granted.

CONCLUSION

Apple respectfully requests that the Court grant judgment as a matter of law in Apple's favor on all claims. Alternatively, Apple requests that the Court grant a new trial on all issues.

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Respectfully submitted,

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